# SEARCH REQUEST FORM

**Scientific and Technical Information Center**

Requester's Full Name: HELEN PETTUTO Examiner #: 70058 Date: 8/9/04
Art Unit: 1713 Phone Number 30 2-1108 Serial Number: 10/662,667
Mail Box and Bldg/Room Location: REM 10A29 Results Format Preferred (circle): PAPER DISK E-MAIL

**If more than one search is submitted, please prioritize searches in order of need.**

**********

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: See ATTACHED

Inventors (please provide full names):

Earliest Priority Filing Date: 9/30/02

***For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.**

A copolymer comprising: alternating copolymer -> C2
- olefin unit (i) -> see attached P.S.
- N-phenyl-substituted maleimide (ii) -> claim 3

KEY WORDS

optical, birefringence, refractive index, transparent/transparency, stretched film/sheet (stretch #3), solution-cast/extruded film

THANKS!

**********

**STAFF USE ONLY**

Searcher: Y. Fuller
Searcher Phone #:
Searcher Location:
Date Searcher Picked Up:
Date Completed: 8/13/04
Searcher Prep & Review Time: 30
Clerical Prep Time:
Online Time: 46

PTO-1590 (8-01) Subset

**Type of Search**

NA Sequence (#)
AA Sequence (#)
Structure (#) 4
Bibliographic
Litigation
Fulltext
Patent Family
Other

**Vendors and cost where applicable**

STN
Dialog
Questel/Orbit
Dr.Link
Lexis/Nexis
Sequence Systems
WWW/Internet
Other (specify)

# STIC Search Report
## EIC 1700

USPTO

## STIC Database Tracking Number: 129456

**TO: Helen Pezzuto**
**Location: REM 10A29**
**Art Unit : 1713**
**August 13, 2004**

**Case Serial Number: 10/663667**

**From: Kathleen Fuller**
**Location: EIC 1700**
**REMSEN 4B28**
**Phone: 571/272-2505**
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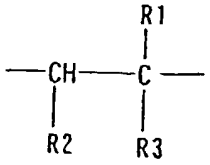
## Search Notes

Search and Information Resources Administration

10/663,667 (9/30/02)

**WHAT IS CLAIMED IS:**

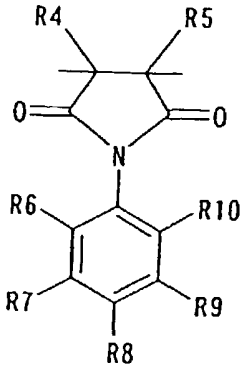
1. A transparent heat-resistant resin optical material comprising a copolymer comprising an olefin residue unit represented by the following formula (i):




( i )

wherein R1, R2, and R3 each represents hydrogen or an alkyl group having from 1 to 6 carbon atoms, and

an N-phenyl-substituted maleimide residue unit represented by the following formula (ii):




( i i )

wherein R4 and R5 each represents hydrogen or a linear or branched alkyl group having from 1 to 8 carbon atoms; R7, R8, and R9 each represents hydrogen, a halogen based element, a carboxylic acid, a carboxylic acid ester, a hydroxyl group, a cyano group, a nitro group, or a linear or branched alkyl group having from 1 to 8 carbon atoms; and R6 and R10 each represents hydrogen, a halogen based element, a carboxylic acid, a carboxylic acid ester, a hydroxyl group, a cyano group, a nitro group, or a linear or

branched alkyl group having from 1 to 8 carbon atoms, and when at least one of R6 or R10 represents hydrogen, the other should not be hydrogen but represent a halogen based element, a carboxylic acid, a carboxylic acid ester, a hydroxyl group, a cyano group, a nitro group, or a linear or branched alkyl group having from 1 to 8 carbon atoms,

the copolymer having a weight average molecular weight, as reduced into standard polystyrene, of from $5 \times 10^3$ to $5 \times 10^6$, and the transparent heat-resistant resin optical material exhibiting negative birefringence.

2. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the copolymer comprising an olefin residue unit represented by the formula (i) and an N-phenyl-substituted maleimide reside unit represented by the formula (ii) is an alternating copolymer.

3. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the olefin residue unit represented by the formula (i) is a residue unit derived from isobutene; and the N-phenyl-substituted maleimide residue represented by the formula (ii) is a residue unit derived from one or more members selected from the group consisting of N-(2-methylphenyl)maleimide, N-(2,6-diethylphenyl)maleimide, and N-(2,6-diisopropylphenyl)maleimide.

4. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the transparent heat-resistant resin optical material is a film or a sheet.

5. The transparent heat-resistant resin optical material as claimed in claim 1,

wherein the transparent heat-resistant resin optical material is an optical compensating film.

6. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the transparent heat-resistant resin optical material is a retardation film.

7. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the transparent heat-resistant resin optical material is a film or a sheet prepared by uniaxially or multiaxially stretch molding a copolymer comprising the olefin residue unit represented by the formula (i) and the N-phenyl-substituted maleimide residue unit represented by the formula (ii) and having a weight average molecular weight, as reduced into standard polystyrene, of from $5 \times 10^3$ to $5 \times 10^6$ in the temperature range, based on a glass transition temperature of the copolymer, of from [(glass transition temperature) – 20°C] to [(glass transition temperature) + 30°C].

8. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the transparent heat-resistant resin optical material is a film or a sheet prepared by uniaxially or multiaxially stretch molding a copolymer comprising the olefin residue unit represented by the formula (i) and the N-phenyl-substituted maleimide residue unit represented by the formula (ii) and having a weight average molecular weight, as reduced into standard polystyrene, of from $5 \times 10^3$ to $5 \times 10^6$ in the temperature range, based on a glass transition temperature of the copolymer, of from [(glass transition temperature) – 20°C] to [(glass transition temperature) + 20°C].

9. The transparent heat-resistant resin optical material as claimed in claim 1,

wherein the transparent heat-resistant resin optical material is a retardation film exhibiting negative birefringence and having a relationship of three-dimensional refractive indexes of $nz \geq ny > nx$ in the case where when the stretching direction is an x-axis within the film plane, the perpendicular direction within the film plane is a y-axis, and the vertical direction outside the film plane is a z-axis, nx stands for a refractive index in the x-axis direction, ny stands for a refractive index in the y-axis direction, and nz stands for a refractive index in the z-axis direction.

10. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the transparent heat-resistant resin optical material is a film having negative birefringence, which is prepared by molding a copolymer comprising the olefin residue unit represented by the formula (i) and the N-phenyl-substituted maleimide residue unit represented by the formula (ii) and having a weight average molecular weight, as reduced into standard polystyrene, of from $5 \times 10^3$ to $5 \times 10^6$ into a film and further uniaxially stretching the copolymer in the temperature range, based on a glass transition temperature of the copolymer, of from [(glass transition temperature) – 20°C] to [(glass transition temperature) + 30°C], the film being a retardation film having a relationship of three-dimensional refractive indexes after uniaxial stretching of $nz \geq ny > nx$ in the case where when the stretching direction is an x-axis within the film plane, the perpendicular direction within the film plane is a y-axis, and the vertical direction outside the film plane is a z-axis, nx stands for a refractive index in the x-axis direction, ny stands for a refractive index in the y-axis direction, and nz stands for a refractive index in the z-axis direction.

11. The transparent heat-resistant resin optical material as claimed in claim 1,

wherein the transparent heat-resistant resin optical material is a retardation film exhibiting negative birefringence and having a relationship of $nz > ny \geq nx$ or $nz > nx \geq ny$ in the case where the biaxial stretching directions are an x-axis within the film plane and a y-axis within the film plane, and the vertical direction outside the film plane is a z-axis, nx stands for a refractive index in the x-axis direction, ny stands for a refractive index in the y-axis direction, and nz stands for a refractive index in the z-axis direction.

12. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the transparent heat-resistant resin optical material is a film having negative birefringence, which is prepared by molding a copolymer comprising the olefin residue unit represented by the formula (i) and the N-phenyl-substituted maleimide residue unit represented by the formula (ii) and having a weight average molecular weight, as reduced into standard polystyrene, of from $5 \times 10^3$ to $5 \times 10^6$ into a film and further biaxially stretching the copolymer in the temperature range, based on a glass transition temperature of the copolymer, of from [(glass transition temperature) – 20°C] to [(glass transition temperature) + 30°C], the film being a retardation film having a relationship of three-dimensional refractive indexes after biaxial stretching of $nz > ny \geq nx$ or $nz > nx \geq ny$ in the case where the biaxial stretching directions are an x-axis within the film plane and a y-axis within the film plane, and the vertical direction outside the film plane is a z-axis, nx stands for a refractive index in the x-axis direction, ny stands for a refractive index in the y-axis direction, and nz stands for a refractive index in the z-axis direction.

13. The transparent heat-resistant resin optical material as claimed in claim 10, wherein the transparent heat-resistant resin optical material is a retardation film prepared by uniaxially stretching the copolymer in the temperature range, based on a glass

transition temperature of the copolymer, of from [(glass transition temperature) – 20°C] to [(glass transition temperature) + 20°C].

14. The transparent heat-resistant resin optical material as claimed in claim 12, wherein the transparent heat-resistant resin optical material is a retardation film prepared by biaxially stretching the copolymer in the temperature range, based on a glass transition temperature of the copolymer, of from [(glass transition temperature) – 20°C] to [(glass transition temperature) + 20°C].

15. The transparent heat-resistant resin optical material as claimed in claim 10, wherein the transparent heat-resistant resin optical material is a film in which the copolymer film before stretching is prepared by solution casting or extrusion molding.

16. The transparent heat-resistant resin optical material as claimed in claim 12, wherein the transparent heat-resistant resin optical material is a film in which the copolymer film before stretching is prepared by solution casting or extrusion molding.

17. The transparent heat-resistant resin optical material as claimed in claim 13, wherein the transparent heat-resistant resin optical material is a film in which the copolymer film before stretching is prepared by solution casting or extrusion molding.

18. The transparent heat-resistant resin optical material as claimed in claim 14, wherein the transparent heat-resistant resin optical material is a film in which the copolymer film before stretching is prepared by solution casting or extrusion molding.

19. An optical compensating member for liquid crystal display element (LCD), comprising using the transparent heat-resistant resin optical material as claimed in claim 1.

polystyrene, of from $5 \times 10^3$ to $5 \times 10^6$.

In the formula (i) as the constitutional unit of the copolymer to be used in the invention, R1, R2, and R3 each represents hydrogen or an alkyl group having from 1 to 6 carbon atoms. Examples of the alkyl group having from 1 to 6 carbon atoms include a methyl group, an ethyl group, an n-propyl group, an isopropyl group, an n-butyl group, a sec-butyl group, a tert-butyl group, a pentyl group, a hexyl group, a cyclopropyl group, a cyclobutyl group, and a cyclohexyl group. Here, in the case where the number of carbon atoms of the alkyl group exceeds 6, the copolymer may possibly be lowered in heat resistance or crystallized, resulting in deterioration in transparency.

(i) Examples of olefins from which is derived the olefin residue unit represented by the formula (i) include isobutene, 2-methyl-1-butene, 2-methyl-1-pentene, 2-methyl-1-hexene, 2-methyl-1-heptene, 1-isooctene, 2-methyl-1-octene, 2-ethyl-1-pentene, 2-methyl-2-pentene, 2-methyl-2-hexene, ethylene, propylene, 1-butene, and 1-hexene. Above all, 1,2-di-substituted olefins, especially isobutene, are preferable because they can provide copolymers having excellent heat resistance and mechanical characteristics. The olefins may be used alone or in combination of two or more thereof, but the ratio thereof is not restricted.

In the formula (ii) as the constitutional unit of the copolymer to be used in the invention, R4 and R5 each represents hydrogen or a linear or branched alkyl group having from 1 to 8 carbon atoms. Examples of the alkyl group having from 1 to 8 carbon atoms include a methyl group, an ethyl group, an n-propyl group, an isopropyl group, an n-butyl group, a sec-butyl group, a tert-butyl group, a pentyl group, a hexyl group, an octyl group, a cyclopropyl group, a cyclobutyl group, and a cyclohexyl group. In the case where the number of carbon atoms of the linear or branched alkyl group exceeds 8, the copolymer may possibly be deteriorated in heat resistance or cause partial

the number of carbon atoms of the linear or branched alkyl group exceeds 8, the copolymer may possibly be deteriorated in heat resistance or cause partial crystallization.

In the case where R6 and R10 each represents hydrogen, i.e., in the case where no substituent is present at the ortho-positions of phenyl, the resulting copolymer has a low Abbe number. Optical materials obtained from such a copolymer do not exhibit negative birefringence.

As N-phenyl-substituted maleimides from which the N-phenyl-substituted maleimide residue unit represented by the formula (ii) is derived, can be used N-phenyl-substituted maleimides in which a specific substituent is present at the ortho-position(s) as an N-substituent of the maleimide compound. Examples include N-(2-methylphenyl)maleimide, N-(2-ethylphenyl)maleimide, N-(2-n-propylphenyl)maleimide, N-(2-isopropylphenyl)maleimide, N-(2-n-butylphenyl)maleimide, N-(2-sec-butylphenyl)maleimide, N-(2-tert-butylphenyl)maleimide, N-(2-n-pentylphenyl)maleimide, N-(2-tert-pentylphenyl)maleimide, N-(2,6-dimethylphenyl)maleimide, N-(2,6-diethylphenyl)maleimide, N-(2,6-di-n-propylphenyl)maleimide, N-(2,6-diisopropylphenyl)maleimide, N-(2-methyl-6-ethylphenyl)maleimide, N-(2-methyl-6-isopropylphenyl)maleimide, N-(2-chlorophenyl)maleimide, N-(2-bromophenyl)maleimide, N-(2,6-dichlorophenyl)maleimide, N-(2,6-dibromophenyl)maleimide, N-(2-biphenyl)maleimide, N-(2-diphenylether)maleimide, N-(2-cyanophenyl)maleimide, and N-(2-nitrophenyl)maleimide. These compounds may be used alone or in combination of two or more thereof, but the ratio thereof is not restricted. Above all, one or more N-phenyl-substituted maleimides selected from the group consisting of

N-(2-methylphenyl)maleimide, N-(2,6-dimethylphenyl)maleimide, N-(2,6-diethylphenyl)maleimide, and N-(2,6-diisopropylphenyl)maleimide are especially preferable because transparent heat-resistant resin optical materials having excellent heat resistance and mechanical properties and exhibiting relatively high negative birefringence are obtained.

With respect to the substituent to be introduced into the phenyl group in the formula (ii), it is important to utilize those in which a specific substituent is introduced at the ortho-position(s) from the viewpoint of the desired optical function. In addition, other substituents may be introduced at the meta-position(s) and/or the para-position. Examples of such N-phenyl-substituted maleimides include N-(2,4,6-trimethylpheny)maleimide, N-(2,4-dimethylphenyl)maleimide, N-(perbromophenyl)maleimide, N-(2-methyl-4-hydroxyphenyl)maleimide, and N-(2,6-diethyl-4-hydroxyphenyl)maleimide.

The copolymer that is used in the transparent heat-resistant resin optical material of the invention has a weight average molecular weight, as reduced into standard polystyrene, of from $5 \times 10^3$ to $5 \times 10^6$. In the case of copolymers having a weight average molecular weight exceeding $5 \times 10^6$, it is difficult to mold them as optical materials. On the other hand, in the case of copolymers having a weight average molecular weight of less than $5 \times 10^3$, the resulting copolymers are very brittle so that it is difficult to use them as optical materials. Incidentally, the weight average molecular weight can be obtained by measuring an elution curve of the copolymer by gel permeation chromatography (hereinafter referred to as "GPC") as reduced into standard polystyrene.

The copolymer to be used in the invention is especially preferably an alternating copolymer in which the olefin residue unit represented by the formula (i) and the

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USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 11 AUG 2004 HIGHEST RN 725685-10-9
DICTIONARY FILE UPDATES: 11 AUG 2004 HIGHEST RN 725685-10-9

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http://www.cas.org/ONLINE/DBSS/registryss.html

=> FILE HCAPLUS
FILE 'HCAPLUS' ENTERED AT 10:05:11 ON 13 AUG 2004
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FILE COVERS 1907 - 13 Aug 2004 VOL 141 ISS 7
FILE LAST UPDATED: 11 Aug 2004 (20040811/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

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L7 STR

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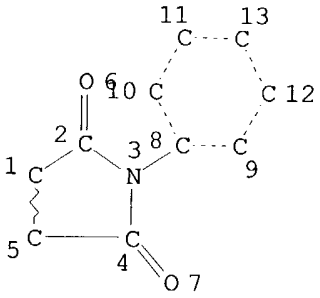



NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RSPEC I
NUMBER OF NODES IS 13

STEREO ATTRIBUTES: NONE
L8 STR 2

CH=C
1 2

4,264 polymers from structure 1 and 2

NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 2

STEREO ATTRIBUTES: NONE

| | | |
|---|---|---|
| L9 | SCR 2043 | |
| L11 | 4264 SEA | FILE=REGISTRY SSS FUL L7 AND L8 AND L9 |
| L14 | 93 SEA | FILE=HCAPLUS ABB=ON L11(L)TRANSPAR? |
| L15 | 21 SEA | FILE=HCAPLUS ABB=ON L14(L)OPTIC? |
| L16 | 685 SEA | FILE=REGISTRY ABB=ON L11 AND 2/NR |
| L17 | 672 SEA | FILE=HCAPLUS ABB=ON L16 |
| L18 | 9 SEA | FILE=HCAPLUS ABB=ON L15 AND L17 |
| L19 | STR | |

CH-Ak
@5 6

Subset search

Ak—C—Ak
7 @8 9

G1—CH=G2
3 1 2

Ak @4

VAR G1=H/4
VAR G2=CH2/5/8
NODE ATTRIBUTES:
CONNECT IS E1 RC AT 4
CONNECT IS E1 RC AT 6
CONNECT IS E1 RC AT 7
CONNECT IS E1 RC AT 9
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 9

STEREO ATTRIBUTES: NONE

| | | | |
|---|---|---|---|
| L21 | 3360 | SEA FILE=REGISTRY SUB=L11 SSS FUL L19 | |
| L22 | 484 | SEA FILE=REGISTRY ABB=ON | L21 AND 2/NR |
| L23 | 412 | SEA FILE=HCAPLUS ABB=ON | L22 |
| L24 | 249 | SEA FILE=HCAPLUS ABB=ON | L23(L)(PREP OR IMF OR SPN)/RL |
| L25 | 12 | SEA FILE=HCAPLUS ABB=ON | L24 AND TRANSPAR? |
| L26 | 9 | SEA FILE=HCAPLUS ABB=ON | L24 AND OPTIC? |
| L27 | 1 | SEA FILE=HCAPLUS ABB=ON | L24 AND BIREFRING? |
| L28 | 20 | SEA FILE=HCAPLUS ABB=ON | (L25 OR L26 OR L27) |
| L29 | 28 | SEA FILE=HCAPLUS ABB=ON | L18 OR L28 |

28 CA references with utility

=> D L29 ALL 1-28 HITSTR

L29 ANSWER 1 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2004:512635 HCAPLUS
DN 141:79433
ED Entered STN: 25 Jun 2004
TI Photo- and heat-curable polymer compositions, their use as color filters, and liquid crystal displays
IN Kaneko, Tomomasa; Ueda, Kenichi
PA Nippon Shokubai Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G03F007-004

ICS C08F290-00; G02B005-20; G02F001-1333; G02F001-1335; G02F001-1339; G03F007-027; G03F007-033
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2004177498 | A2 | 20040624 | JP 2002-341066 | 20021125 |
| PRAI JP 2002-341066 | | 20021125 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2004177498 | ICM | G03F007-004 |
| | ICS | C08F290-00; G02B005-20; G02F001-1333; G02F001-1335; G02F001-1339; G03F007-027; G03F007-033 |
| JP 2004177498 | FTERM | 2H025/AB13; 2H025/AC01; 2H025/AD01; 2H025/BC32; 2H025/BC42; 2H025/CA27; 2H025/CA28; 2H025/CB10; 2H025/CB13; 2H025/CB14; 2H025/CB41; 2H025/CB43; 2H025/CB52; 2H025/CC20; 2H025/FA03; 2H025/FA17; 2H025/FA29; 2H048/BA11; 2H048/BA45; 2H048/BA48; 2H048/BB07; 2H048/BB08; 2H089/LA09; 2H089/LA11; 2H089/MA04; 2H089/NA14; 2H089/PA06; 2H089/PA07; 2H089/QA06; 2H089/QA14; 2H089/TA05; 2H089/TA09; 2H089/TA12; 2H090/HB13X; 2H090/HC05; 2H090/HD06; 2H090/LA02; 2H090/LA15; 2H091/FA04Y; 2H091/FA35Y; 2H091/FB04; 2H091/FC23; 2H091/FD04; 2H091/GA08; 2H091/GA16; 2H091/LA04; 4J027/AA02; 4J027/AJ01; 4J027/AJ05; 4J027/BA20; 4J027/BA21; 4J027/BA24; 4J027/BA26; 4J027/BA28; 4J027/CB10; 4J027/CC03; 4J027/CD10 |

AB The compns. comprise (A) binder resins containing carboxyl groups and/or ester groups, (B) radically polymerizable monomers, (C) photopolymn. initiators, (D) esterification catalysts and/or ester exchanger catalysts, and (X) compds. having ≥2 OH groups or having ≥1 OH group(s) and ≥1 radically polymerizable double bond(s). Color filters made of the compns. and liquid crystal displays comprising the color filters are also claimed. The color filters prepared from the compns. have high hardness and heat resistance.

ST photocurable heat curable polymer compn color filter; color filter LCD acrylic light heat curable polymer

IT Liquid crystal displays
**Optical** filters
(heat- and photocurable polymer compns. for color filters in liquid crystal displays)

IT Photoimaging materials
(photo- and heat-curable; heat- and photocurable polymer compns. for color filters in liquid crystal displays)

IT 13963-57-0, Aluminum tris(acetylacetonate)
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(ester exchange catalyst; heat- and photocurable polymer compns. for color filters in liquid crystal displays)

IT 709631-64-1P, Dipentaerythritol pentaacrylate-methacrylic acid-methyl methacrylate-trimethylolpropane copolymer 709631-65-2P, Cyclohexyl methacrylate-dipentaerythritol pentaacrylate-2-ethylhexyl methacrylate-methacrylic acid-methyl methacrylate copolymer
**709632-22-4P**
RL: DEV (Device component use); **IMF (Industrial manufacture);**

TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(heat- and photocurable polymer compns. for color filters in liquid crystal displays)

IT 90-93-7, 4,4'-Bis(diethylamino)benzophenone 1707-68-2, 2,2'-Bis(2-chlorophenyl)-4,4',5,5'-tetraphenylbiimidazole
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(photopolymn. initiator; heat- and photocurable polymer compns. for color filters in liquid crystal displays)

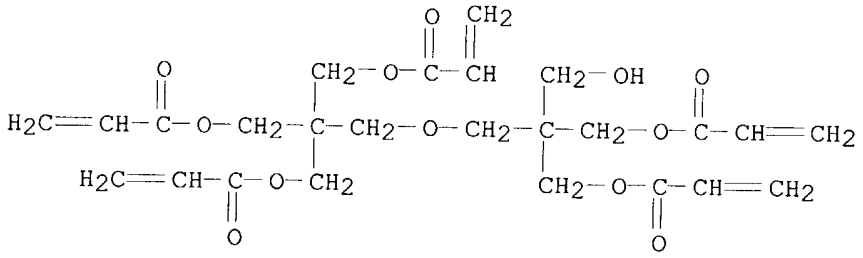
IT **709632-22-4P**
RL: DEV (Device component use); **IMF (Industrial manufacture)**; TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(heat- and photocurable polymer compns. for color filters in liquid crystal displays)

RN 709632-22-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate and 1-phenyl-1H-pyrrole-2,5-dione, 2-hydroxy-3-[(2-methyl-1-oxo-2-propenyl)oxy]propyl ester, polymer with 2-[[3-hydroxy-2,2-bis[[(1-oxo-2-propenyl)oxy]methyl]propoxy]methyl]-2-[[(1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl di-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 60506-81-2
CMF C25 H32 O12

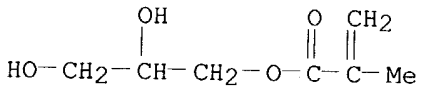


CM 2

CRN 557787-06-1
CMF (C10 H7 N O2 . C5 H8 O2 . C4 H6 O2)x . x C7 H12 O4

CM 3

CRN 5919-74-4
CMF C7 H12 O4

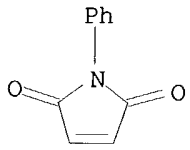


CM 4

CRN 108602-53-5
CMF (C10 H7 N O2 . C5 H8 O2 . C4 H6 O2)x
CCI PMS

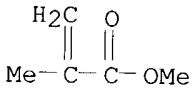
CM 5

CRN 941-69-5
CMF C10 H7 N O2



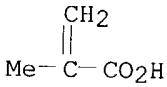
CM 6

CRN 80-62-6
CMF C5 H8 O2



CM 7

CRN 79-41-4
CMF C4 H6 O2



L29 ANSWER 2 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2004:261018 HCAPLUS
DN 140:271731
ED Entered STN: 31 Mar 2004
TI **Transparent** heat-resistant resin **optical** material and film
IN Toyomasu, Shinsuke; Ikai, Yojiro
PA Tosoh Corporation, Japan
SO Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM C08F222-40
ICS G02B001-04; G02B005-30
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 38

applicants

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 1403297 | A1 | 20040331 | EP 2003-20558 | 20030917 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK | | | | |
| | US 2004063887 | A1 | 20040401 | US 2003-663667 | 20030917 |
| PRAI | JP 2002-286212 | A | 20020930 | | |
| | JP 2003-8138 | A | 20030116 | | |
| | JP 2003-8139 | A | 20030116 | | |
| | JP 2003-204632 | A | 20030731 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| EP 1403297 | ICM | C08F222-40 |
| | ICS | G02B001-04; G02B005-30 |
| EP 1403297 | ECLA | G02B001/04; G02B005/30R |

AB A **transparent** heat-resistant resin **optical** materials having excellent heat resistance and dynamic characteristics, having neg. **birefringence** and exhibiting a high refractive index and a high Abbe number, especially **optical** compensating members such as films, sheets and retardation films for LCD display element. The **transparent** heat-resistant resin **optical** material is made of a copolymer containing a specific olefin residue unit and a specific N-phenyl-substituted maleimide residue unit and having a weight-average mol. weight 5 + 103 to 5 + 106, and exhibiting neg. **birefringence** . An N-(2-methylphenyl)maleimide-isobutene alternating copolymer film was dried at 100° for 4 h, 120-160° (raising the temperature 10°) over 1 h, and in vacuo at 180° for 4 h. The dried film had a light transmittance 92%, haze 0.3%, refractive index 1.57, an Abbe number 37, a retardation amount of 0 nm, and a Tg 206°. After stretching, the film had neg. **birefringence** and a retardation amount [Re = (nx -ny)d; d thickness] -125 nm/100 pm of the stretched film thickness.

ST alkylmaleimide isobutene alternating copolymer heat resistant **optical** film

IT Liquid crystal displays
(compensating member; **transparent** heat-resistant resin **optical** material film for display device)

IT **Transparent** materials
(heat-resistant; **transparent** heat-resistant resin **optical** material film for display device)

IT **Optical** films
(**transparent** heat-resistant resin **optical** material film for display device)

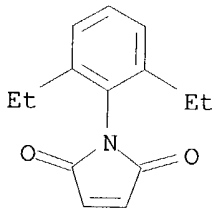
IT Heat-resistant materials
(**transparent**; **transparent** heat-resistant resin **optical** material film for display device)

IT **180463-25-6P**, N-(2,6-Diethylphenyl)maleimide-isobutene alternating copolymer **180463-27-8P**, N-(2-Methylphenyl)maleimide-isobutene alternating copolymer **674294-15-6P**, N-(2,6-Diisopropylphenyl)maleimide-isobutene alternating copolymer
RL: **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
(**transparent** heat-resistant resin **optical** material film for display device)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Eric, N; US 3352832 A 1967
(2) Hayashi, M; WO 03100480 A 2003 HCAPLUS
(3) Kanegafuchi Chemical Ind; EP 1160591 A 2001 HCAPLUS
(4) Suzuki, M; WO 9730119 A 1997 HCAPLUS
(5) Tosoh Corp; EP 0463612 B 1992 HCAPLUS
(6) Tosoh Corp; JP 05117334 A 1993 HCAPLUS
IT **180463-25-6P**, N-(2,6-Diethylphenyl)maleimide-isobutene alternating copolymer **180463-27-8P**, N-(2-Methylphenyl)maleimide-isobutene alternating copolymer **674294-15-6P**, N-(2,6-Diisopropylphenyl)maleimide-isobutene alternating copolymer
RL: **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
(**transparent** heat-resistant resin **optical** material film for display device)
RN 180463-25-6 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-(2,6-diethylphenyl)-, polymer with 2-methyl-1-propene, alternating (9CI) (CA INDEX NAME)

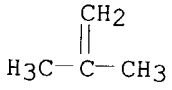
CM 1

CRN 38167-72-5
CMF C14 H15 N O2




CM 2

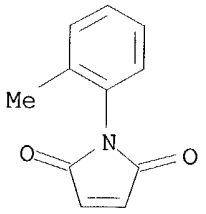
CRN 115-11-7
CMF C4 H8




RN 180463-27-8 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-(2-methylphenyl)-, polymer with 2-methyl-1-propene, alternating (9CI) (CA INDEX NAME)

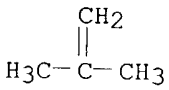
CM 1

CRN 4067-01-0
CMF C11 H9 N O2




CM 2

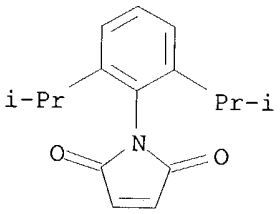
CRN 115-11-7
CMF C4 H8




RN 674294-15-6 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-[2,6-bis(1-methylethyl)phenyl]-, polymer with 2-methyl-1-propene, alternating (9CI) (CA INDEX NAME)

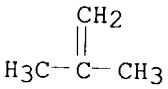
CM 1

CRN 56746-12-4
CMF C16 H19 N O2




CM 2

CRN 115-11-7
CMF C4 H8




L29 ANSWER 3 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:903870 HCAPLUS
DN 138:369262

ED Entered STN: 29 Nov 2002
TI High-performance polymer waveguide devices via low-cost direct photolithography process
AU Wang, Jianguo; Shustack, Paul J.; Garner, Sean M.
CS Sci. Technol. Div., Corning Inc., Corning, NY, 14831, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (2002), 4904(Optical Fiber and Planar Waveguide Technology II), 129-138
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 36, 73
AB The design and development of photoresist-like highly fluorinated maleimide copolymers and waveguide fabrication and **optical** testing are described. A series of thermally stable, (Tg >150°, Td >300°) highly fluorinated (50%) maleimide copolymers were prepared by radical polymerization of halogenated maleimides with various halogenated comonomers. A theor. correlation between **optical** loss and copolymer structure was quant. established from C-H bond overtone anal. This correlation was developed through design and manipulation of the copolymer structure by changing the primary properties such as mol. weight, copolymer composition, copolymer sequence distribution, and variations of the side chain including photochem. functionalized side units. Various characterization methods were used such as (H, C13, F19) NMR, UV-NIR, FTIR, GPC, etc. The copolymers exhibit excellent solubility in ketone solvents and high quality thin films can be prepared by spin coating. The polymer films have a refractive index of 1.42-1.67 and **optical** loss of 0.2 to 0.4 dB/cm at 1550 nm depending on the composition as extrapolated from UV-NIR spectra. When glycidyl methacrylate is incorporated into the polymer backbone, the material behaves like a neg. photoresist with the addition of cationic photoinitiator. The final crosslinked polymers show excellent **optical** and thermal properties. The photolithog. processing of the highly fluorinated copolymer material was examined in detail using in-situ FTIR. The influence of various polymer structural parameters on the photosensitivity and photo contrast of the polymer was evaluated in detail. The same polymeric material was tested using hot micro-embossing and E-beam lithog. to fabricate channel waveguides and other microstructures. The versatility of this unique photocrosslinkable thermoplastic material for various passive and active **optical** components is discussed in detail.
ST fluorinated maleimide pentafluorophenylmaleimide fluoropolymer prepn radical polymn; refractive index **optical** loss maleimide copolymer fluorinated maleimide; electron beam lithog micro embossing fluorinated maleimide copolymer; waveguide fabrication electron beam lithog embossing fluoropolymer
IT Polyimides, preparation
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(acrylic, fluorine-containing; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)
IT Fluoropolymers, preparation
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(acrylic, maleimide-containing; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct

photolithog. and e-beam micro-embossing for fabrication of waveguides)

IT **Optical** instruments
(attenuators; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

IT **Optical** waveguides
(channel and splitters and thermal switches; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

IT Embossing
(e-beam; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

IT **Optical** waveguides
(fiber, low-loss; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

IT Acrylic polymers, preparation
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(fluorine-containing, maleimide-containing; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

IT Acrylic polymers, preparation
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(polyimide-, fluorine-containing; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

IT Electron beams
Glass transition temperature
Negative photoresists
Photolithography
Refractive index
Thermal stability
(preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

IT Polymerization
(radical; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

IT Polymer chains
(sequence distribution; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

IT Polymer chains
(side; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

IT 106-91-2DP, Glycidyl methacrylate, polymers with fluorinated maleimides and acrylic monomers 541-59-3DP, Maleimide, fluorinated, polymers with acrylic monomers and fluorophenylstyrene 59726-65-7DP, N-Pentafluorophenyl maleimide, polymers with fluorinated maleimides and acrylic monomers 342424-50-4P **342424-51-5P** 423119-96-4P

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); **SPN (Synthetic preparation)**; TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
(preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Chalk, J; PCT Int Appl WO 0236647 2002
(2) Elada, L; SPIE Critical Reviews 1997, VCR68, P207
(3) He, M; SPIE Proceedings 2002, V4918-33
(4) Ishigure, T; J Lightwave Technol 2000, V18, P178 HCAPLUS
(5) Kim, J; Macromolecules 2001, V34, P7817 HCAPLUS
(6) Kobayashi, J; Journal of Lightwave Technology 1998, V16, P1024 HCAPLUS
(7) Matsumoto, A; Macromolecules 1990, V23, P4508 HCAPLUS
(8) Norwood, R; Proceedings OSA Organic Thin Films for Photonics Applications 1997, P161
(9) Ober, C; US 6379874 2002 HCAPLUS
(10) Pitois, C; Macromolecules 1999, V32, P2903 HCAPLUS
(11) Shah, H; Polymer Preprints 1999, V40(2), P1293 HCAPLUS
(12) Wang, J; US 6314225 2001 HCAPLUS
(13) Wang, J; Macromolecules 1997, V30, P1906 HCAPLUS
(14) Yao, H; Proceedings of SPIE 2001, V4439, P36 HCAPLUS

IT **342424-51-5P**

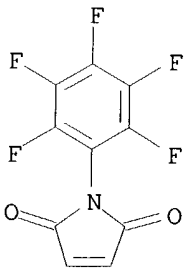
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); **SPN (Synthetic preparation)**; TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
(preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

RN 342424-51-5 HCAPLUS

CN 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl ester, polymer with 1-(pentafluorophenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

CM 1

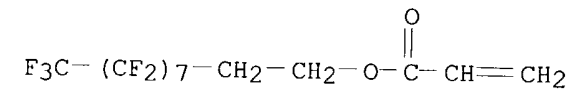
CRN 59726-65-7
CMF C10 H2 F5 N O2



CM 2

CRN 27905-45-9

CMF C13 H7 F17 O2



L29 ANSWER 4 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:450937 HCAPLUS
DN 135:46992
ED Entered STN: 22 Jun 2001
TI Preparation of transparent heat-resistant maleimide and methacrylic copolymers
IN Ueda, Kenichi; Makino, Tomomi; Yamaguchi, Minoru
PA Nippon Shokubai Co., Ltd., Japan
SO Eur. Pat. Appl., 15 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM C08F220-12
ICS C08F222-40
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 73
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 1108731 | A2 | 20010620 | EP 2000-127078 | 20001211 |
| | EP 1108731 | A3 | 20010905 | | |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | US 6417306 | B1 | 20020709 | US 2000-722344 | 20001128 |
| | JP 2001233919 | A2 | 20010828 | JP 2000-379391 | 20001213 |
| PRAI | JP 1999-353622 | A | 19991213 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| EP 1108731 | ICM | C08F220-12 |
| | ICS | C08F222-40 |

AB The polymer having a small amount of residual maleimide monomer and maleimide monomer generated by heating in mold processing, good transparency and heat resistance, and reduced discoloration, is prepared by polymerizing monomers containing a maleimide monomer (e.g., N-phenylmaleimide) and
a methacrylic acid ester monomer (e.g., Me methacrylate) wherein an acidic substance(e.g., di-Me phosphite) is made to exist with a sulfur chain-transfer agent (e.g., n-dodecylmercaptan) in the polymerization system. The polymer, useful for optical and automobile materials, has residual maleimide monomer content ≤10X ppm (X = amount of a structural unit derived from the maleimide monomer) and maleimide monomer content (generated by heating the polymer at 240° for 10 min) ≤10X ppm.
ST heat resistance maleimide methacrylate polymer optical; maleimide methacrylate polymer prepn transparency
IT Transparent materials
(heat-resistant; preparation of transparent heat-resistant maleimide and methacrylic copolymers for optical and automobile materials)
IT Automobiles

(parts; preparation of transparent heat-resistant maleimide and methacrylic copolymers for optical and automobile materials)

IT Discoloration prevention
Optical materials
(preparation of transparent heat-resistant maleimide and methacrylic copolymers for optical and automobile materials)

IT Heat-resistant materials
(transparent; preparation of transparent heat-resistant maleimide and methacrylic copolymers for optical and automobile materials)

IT 112-55-0, n-Dodecyl mercaptan 25103-58-6, tert-Dodecyl mercaptan
RL: RCT (Reactant); RACT (Reactant or reagent)
(chain-transfer agent; preparation of transparent heat-resistant maleimide and methacrylic copolymers for optical and automobile materials)

IT **32554-23-7P**, Methyl methacrylate-N-phenylmaleimide copolymer
**81598-70-1P**, Methyl methacrylate-N-phenylmaleimide-styrene copolymer 105469-99-6P, Methyl methacrylate-N-cyclohexylmaleimide copolymer 109636-51-3P, N-Cyclohexylmaleimide-methyl methacrylate-styrene copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of **transparent** heat-resistant maleimide and methacrylic copolymers for **optical** and automobile materials)

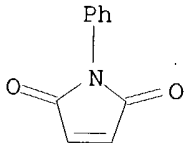
IT 64-19-7, Acetic acid, uses 108-24-7, Acetic anhydride 298-07-7 868-85-9, Dimethyl phosphite 1571-33-1, Phenylphosphonic acid 6303-21-5D, Phosphinic acid, derivs. 13598-36-2D, Phosphonic acid, derivs. 25756-87-0D, Phosphinous acid, derivs.
RL: MOA (Modifier or additive use); USES (Uses)
(preparation of transparent heat-resistant maleimide and methacrylic copolymers for optical and automobile materials)

IT **32554-23-7P**, Methyl methacrylate-N-phenylmaleimide copolymer
**81598-70-1P**, Methyl methacrylate-N-phenylmaleimide-styrene copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of **transparent** heat-resistant maleimide and methacrylic copolymers for **optical** and automobile materials)

RN 32554-23-7 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

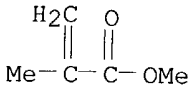
CM 1

CRN 941-69-5
CMF C10 H7 N O2




CM 2

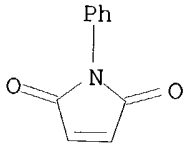
CRN 80-62-6
CMF C5 H8 O2



RN 81598-70-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with ethenylbenzene and 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

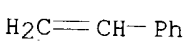
CM 1

CRN 941-69-5
CMF C10 H7 N O2



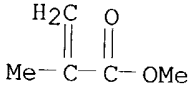
CM 2

CRN 100-42-5
CMF C8 H8



CM 3

CRN 80-62-6
CMF C5 H8 O2



L29 ANSWER 5 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:396943 HCAPLUS
DN 135:6011
ED Entered STN: 01 Jun 2001
TI N-halogenated maleimide copolymers and **optical** materials thereof
IN Wang, Jianguo
PA Corning Incorporated, USA
SO PCT Int. Appl., 44 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C08F214-00
ICS C08F214-02; C08F214-18; G02B006-10; G02B006-24

CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 73

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 2001038411 | A1 | 20010531 | WO 2000-US29532 | 20001026 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW | | | | |
| | RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| | US 6314225 | B1 | 20011106 | US 1999-448839 | 19991123 |
| | TW 491858 | B | 20020621 | TW 2000-89125100 | 20001123 |
| PRAI | US 1999-448839 | A | 19991123 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| WO 2001038411 | ICM | C08F214-00 |
| | ICS | C08F214-02; C08F214-18; G02B006-10; G02B006-24 |

AB A copolymer containing N-halogenated Ph maleimide units or N-halogenated Ph bismaleimide units and one or more second units selected from halogenated acrylates, halogenated styrenes, halogenated vinyl ether, halogenated olefins, halogenated vinyl isocyanates, halogenated N-vinyl amides, halogenated allyls, halogenated propenyl ethers, halogenated methacrylates, halogenated maleates, halogenated itaconates, and halogenated crotonates, is useful in **optical** devices such as **optical** fibers. A polymer was prepared from pentafluoro styrene and pentafluorophenyl maleimide.

ST halogenated maleimide copolymer **optical** device

IT **Optical** fibers
**Optical** instruments
Waveguides
(N-halogenated maleimide copolymers and **optical** materials thereof)

IT 342424-50-4P **342424-51-5P 342424-52-6P**
**342424-53-7P 342424-54-8P**
RL: **IMF (Industrial manufacture)**; PRP (Properties); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(N-halogenated maleimide copolymers and **optical** materials thereof)

IT 59726-64-6P, N-Pentafluorophenylmaleamic acid 59726-65-7P, N-Pentafluorophenylmaleimide
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(N-halogenated maleimide copolymers and **optical** materials thereof)

IT 108-31-6, Maleic anhydride, reactions 771-60-8, Pentafluoro aniline
RL: RCT (Reactant); RACT (Reactant or reagent)
(N-halogenated maleimide copolymers and **optical** materials thereof)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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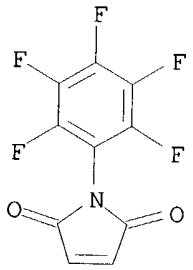
(7) Nield; US 3666720 A 1972 HCAPLUS

IT **342424-51-5P 342424-52-6P 342424-53-7P**
**342424-54-8P**
RL: **IMF (Industrial manufacture)**; PRP (Properties); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(N-halogenated maleimide copolymers and **optical** materials thereof)

RN 342424-51-5 HCAPLUS
CN 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl ester, polymer with 1-(pentafluorophenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

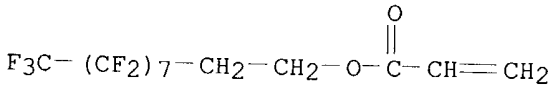
CM 1

CRN 59726-65-7
CMF C10 H2 F5 N O2



CM 2

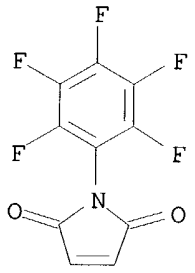
CRN 27905-45-9
CMF C13 H7 F17 O2



RN 342424-52-6 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-(pentafluorophenyl)-, polymer with (2-chloroethoxy)ethene (9CI) (CA INDEX NAME)

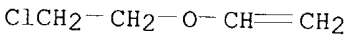
CM 1

CRN 59726-65-7
CMF C10 H2 F5 N O2



CM 2

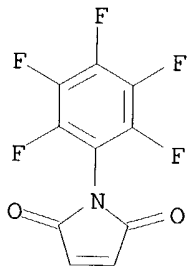
CRN 110-75-8
CMF C4 H7 Cl O



RN 342424-53-7 HCAPLUS
CN 1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-methyl-N-[2-(vinyloxy)ethyl]-, polymer with 1-(pentafluorophenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

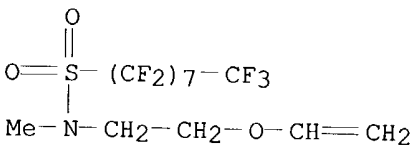
CM 1

CRN 59726-65-7
CMF C10 H2 F5 N O2



CM 2

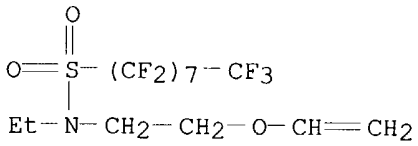
CRN 26686-94-2
CMF C13 H10 F17 N O3 S



RN 342424-54-8 HCAPLUS
CN 1-Octanesulfonamide, N-[2-(ethenyloxy)ethyl]-N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, polymer with 1-(pentafluorophenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

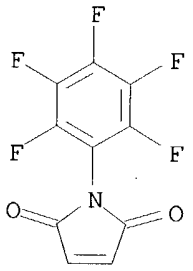
CM 1

CRN 92415-95-7
CMF C14 H12 F17 N O3 S



CM 2

CRN 59726-65-7
CMF C10 H2 F5 N O2



L29 ANSWER 6 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:688709 HCAPLUS
DN 133:363356
ED Entered STN: 01 Oct 2000
TI Design and Demonstration of Hybrid Multilayer Structures: Layer-by-Layer Mixed Covalent and Ionic Interlayer Linking Chemistry
AU Kohli, P.; Blanchard, G. J.
CS Department of Chemistry, Department of Chemistry, East Lansing, MI, 48824-1322, USA
SO Langmuir (2000), 16(22), 8518-8524
CODEN: LANGD5; ISSN: 0743-7463
PB American Chemical Society
DT Journal
LA English
CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 35, 56
AB We report on the growth of layered mol. assemblies where the interlayer attachment chemical is controlled layer-by-layer. We demonstrate the compatibility of chemical where the layers are connected by ionic coordination chemical [ROPO32--Zr4+--O2CR]+OH- and by the formation of

covalent urea moieties. A maleimide-vinyl ether (MVE) copolymer containing pendant benzoic acid and Bu alc. functionalities is used for ionic layer growth. Coupling of covalently bonded layers to the MVE polymer is achieved by the attachment of poly(ethylene imine), PEI, to the MVE surface. Subsequent reaction of the PEI surface with diisocyanates and diamines produces urea-linked covalent multilayers. The covalent multilayers can be converted to ionic growth chemical by treatment of the aminated terminal surface with POCl3 and water followed by further reaction with MVE polymer and Zr4+ ions. We report the reaction schemes for these hybrid layer structures and the characterization of these novel materials by **optical** ellipsometry, FTIR and UV-vis spectroscopy, XPS, and X-ray diffraction. The data show the formation of robust multilayer assemblies characterized by limited order within each layer.

ST multilayer structure covalent ionic hybrid prepn; crystal structure ellipsometry hybrid multilayer structure; polyurea maleimide vinyl ether copolymer layer; zirconium phosphate ionic multilayer polyurea hybrid structure

IT Hybrid organic-inorganic materials
Multilayers
(design and demonstration of hybrid multilayer structures: layer-by-layer mixed covalent and ionic interlayer linking chemical)

IT Crystal structure
Ellipsometry
(in design and demonstration of hybrid multilayer structures: layer-by-layer mixed covalent and ionic interlayer linking chemical)

IT Polyureas
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(in design and demonstration of hybrid multilayer structures: layer-by-layer mixed covalent and ionic interlayer linking chemical)

IT 7440-21-3, Silicon, miscellaneous 7440-32-6, Titanium, miscellaneous 7440-57-5, Gold, miscellaneous
RL: MSC (Miscellaneous)
(in design and demonstration of hybrid multilayer structures: layer-by-layer mixed covalent and ionic interlayer linking chemical)

IT 1633-78-9, 6-Mercapto-1-hexanol 10025-87-3, Phosphorus oxychloride 29611-84-5, Collidine
RL: NUU (Other use, unclassified); USES (Uses)
(in design and demonstration of hybrid multilayer structures: layer-by-layer mixed covalent and ionic interlayer linking chemical)

IT 101-68-8DP, 4,4'-Methylenediphenyleneisocyanate, polyurea derivative **307930-24-1P**, N-(4-Carboxyphenyl)maleimide-4-vinyloxy butanol alternating copolymer
RL: PRP (Properties); **SPN (Synthetic preparation); PREP (Preparation)**
(in design and demonstration of hybrid multilayer structures: layer-by-layer mixed covalent and ionic interlayer linking chemical)

IT 101-77-9 108-31-6, Maleic anhydride, reactions 150-13-0, 4-Aminobenzoic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(in design and demonstration of hybrid multilayer structures: layer-by-layer mixed covalent and ionic interlayer linking chemical)

RE.CNT 58 THERE ARE 58 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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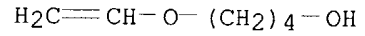
IT **307930-24-1P**, N-(4-Carboxyphenyl)maleimide-4-vinyloxy butanol alternating copolymer
RL: PRP (Properties); **SPN (Synthetic preparation); PREP (Preparation)**
(in design and demonstration of hybrid multilayer structures: layer-by-layer mixed covalent and ionic interlayer linking chemical)

RN 307930-24-1 HCAPLUS
CN Benzoic acid, 4-(2,5-dihydro-2,5-dioxo-1H-pyrrol-1-yl)-, polymer with 4-(ethenyloxy)-1-butanol, alternating (9CI) (CA INDEX NAME)

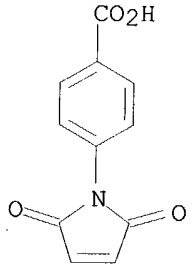
CM 1

CRN 17832-28-9
CMF C6 H12 O2



CM 2

CRN 17057-04-4
CMF C11 H7 N O4



L29 ANSWER 7 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:631908 HCAPLUS
DN 133:208342
ED Entered STN: 12 Sep 2000
TI Manufacture of thermoplastic polymers with low content of unreacted monomers, and maleimide polymers
IN Ueda, Kenichi; Yamaguchi, Minoru; Fujioka, Kazuchika
PA Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F002-44
ICS C08F222-06; C08F222-40
CC 35-4 (Chemistry of Synthetic High Polymers)
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2000248010 | A2 | 20000912 | JP 1999-50485 | 19990226 |
| PRAI JP 1999-50485 | | 19990226 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2000248010 | ICM | C08F002-44 |
| | ICS | C08F222-06; C08F222-40 |

AB The polymers are manufactured by polymerization of monomers containing

α,β-unsatd. dicarboxylic acids or their derivs. while adding dienes and/or their precursors. A solution containing 49:13:38 styrene-acrylonitrile-N-phenylmaleimide copolymer and 180 ppm N-phenylmaleimide (I) was reacted with cyclopentadiene and extruded to give pellets containing 8 ppm I and 90 ppm Diels-Alder adduct. A test piece manufactured from the pellets showed deflection temperature under load 151° and total light transmittance 89%.

ST styrene acrylonitrile phenylmaleimide copolymer manuf cyclopentadiene; thermoplastic manuf reduced unreacted monomer content; heat resistance **transparency** polymaleimide manuf diene

IT Cycloalkadienes
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactants for Diels-Alder reaction with unreacted maleimide; decrease of unreacted monomer contents of maleimide polymers using dienes)

IT **109169-06-4P**, Methyl acrylate-methyl methacrylate-N-phenylmaleimide copolymer
RL: **IMF (Industrial manufacture)**; PRP (Properties); **PREP (Preparation)**
(decrease of unreacted monomer contents of maleimide polymers using dienes)

IT 31621-07-5P, Acrylonitrile-N-phenylmaleimide-styrene copolymer
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(decrease of unreacted monomer contents of maleimide polymers using dienes)

IT 77-73-6, Dicyclopentadiene 542-92-7, Cyclopentadiene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(decrease of unreacted monomer contents of maleimide polymers using dienes)

IT 941-69-5, N-Phenylmaleimide
RL: RCT (Reactant); REM (Removal or disposal); PROC (Process); RACT (Reactant or reagent)
(decrease of unreacted monomer contents of maleimide polymers using dienes)

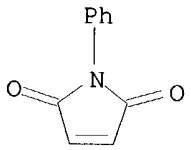
IT **109169-06-4P**, Methyl acrylate-methyl methacrylate-N-phenylmaleimide copolymer
RL: **IMF (Industrial manufacture)**; PRP (Properties); **PREP (Preparation)**
(decrease of unreacted monomer contents of maleimide polymers using dienes)

RN 109169-06-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with methyl 2-propenoate and 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

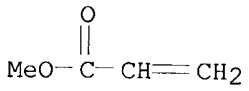
CM 1

CRN 941-69-5
CMF C10 H7 N O2



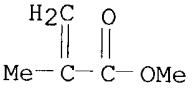

CM 2

CRN 96-33-3
CMF C4 H6 O2



CM 3

CRN 80-62-6
CMF C5 H8 O2



L29 ANSWER 8 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:137305 HCAPLUS
DN 132:181049
ED Entered STN: 29 Feb 2000
TI Vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance
IN Toyokawa, Takuya; Ohmura, Takahiro; Hatakeyama, Hiroshi
PA Sekisui Chemical Co. Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F265-06
CC 35-7 (Chemistry of Synthetic High Polymers)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2000063443 | A2 | 20000229 | JP 1998-235889 | 19980821 |
| PRAI | JP 1998-235889 | | 19980821 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2000063443 | ICM | C08F265-06 |

AB The copolymers are obtained by grafting vinyl chloride and N-substituted maleimides on (A) acrylic copolymer latex (average particle size 0.001-0.2 μm) composed of 100 parts mixts. of 30-95% (meth)acrylates (X) with Tg of their homopolymers ≥-140 and <30° and 5-70% radically polymerizable monomers (Y) with refractive index of their homopolymers ≥1.51 and 0.1-30 parts polyfunctional monomers (Z), (B) acrylic graft copolymer latex (average particle size 0.0001-0.2 μm) of 5-70% acrylic copolymers of 100 parts Y and 0.1-30 parts Z with 30-95% mixts. of 100 parts X and 0.1-30 parts Z, or (C) acrylic graft copolymer latex (average particle size 0.0001-0.2 μm) of 30-95% copolymers of 100 parts X and 0.1-30 parts Z with 5-70% mixts. of 100 parts Y and 0.1-30 parts Z. Thus, 10% acrylic copolymer latex of styrene, Bu acrylate, 2-ethylhexyl acrylate, and trimethylolpropane triacrylate was graft polymerized with 80%

vinyl chloride and 10% N-phenylmaleimide to give a graft copolymer with d.p. 981, visible light transmittance 77%, haze 14%, deflection temperature under load 92°, Charpy impact strength 93%, and tensile strength 469 kg/cm2.

ST vinyl chloride maleimide acrylic graft copolymer; heat impact resistance vinyl chloride graft copolymer; **transparent** graft copolymer vinyl chloride acrylic

IT Polymerization
(graft; vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance)

IT Impact-resistant materials
Impact-resistant materials
(heat-resistant; vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance)

IT Heat-resistant materials
Heat-resistant materials
(impact-resistant; vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance)

IT **Transparent** materials
(vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance)

IT 259527-58-7P, Butyl acrylate-2-ethylhexyl acrylate-N-phenylmaleimide-styrene-trimethylolpropane triacrylate-vinyl chloride graft copolymer **259527-59-8P**, Butyl acrylate-2-ethylhexyl acrylate-N-phenylmaleimide-trimethylolpropane triacrylate-vinyl chloride-vinylidene chloride graft copolymer 259527-60-1P, Acrylic acid-butyl acrylate-N-cyclohexylmaleimide-2-ethylhexyl acrylate-styrene-trimethylolpropane triacrylate-vinyl chloride graft copolymer
RL: **IMF (Industrial manufacture)**; PRP (Properties); **PREP (Preparation)**
(vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance)

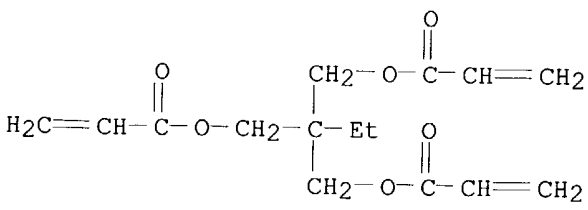
IT **259527-59-8P**, Butyl acrylate-2-ethylhexyl acrylate-N-phenylmaleimide-trimethylolpropane triacrylate-vinyl chloride-vinylidene chloride graft copolymer
RL: **IMF (Industrial manufacture)**; PRP (Properties); **PREP (Preparation)**
(vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance)

RN 259527-59-8 HCAPLUS

CN 2-Propenoic acid, 2-ethyl-2-[[(1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl ester, polymer with butyl 2-propenoate, chloroethene, 1,1-dichloroethene, 2-ethylhexyl 2-propenoate and 1-phenyl-1H-pyrrole-2,5-dione, graft (9CI) (CA INDEX NAME)

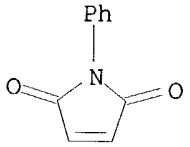
CM 1

CRN 15625-89-5
CMF C15 H20 O6



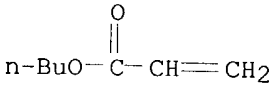
CM 2

CRN 941-69-5
CMF C10 H7 N O2



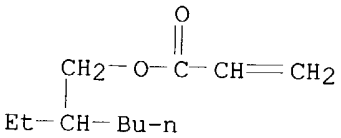
CM 3

CRN 141-32-2
CMF C7 H12 O2



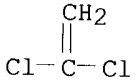
CM 4

CRN 103-11-7
CMF C11 H20 O2



CM 5

CRN 75-35-4
CMF C2 H2 Cl2



CM 6

CRN 75-01-4
CMF C2 H3 Cl

$H_2C{=}CH{-}Cl$

L29 ANSWER 9 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1997:327140 HCAPLUS
DN 127:5449
ED Entered STN: 23 May 1997
TI New reactive polyelectrolyte stabilizers for polyaniline colloids
AU Maeda, Shuichi; Cairns, Dean B.; Armes, Steven P.
CS Sch. Chem. and Mol. Sci., Univ. of Sussex, Brighton, BN1 9QJ, UK
SO European Polymer Journal (1997), 33(3), 245-254
CODEN: EUPJAG; ISSN: 0014-3057
PB Elsevier
DT Journal
LA English
CC 35-8 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 76
AB Polyaniline colloids were prepared using reactive steric stabilizers based on anionic poly(sodium styrene sulfonate) and cationic poly(2-(dimethylamino)ethyl methacrylate) copolymers. Both these polyelectrolyte stabilizers contain reactive co-monomers (either N-phenylmaleimide or 4-aminostyrene), which promote chemical grafting of the stabilizer onto the surface of the polyaniline particles. These polyaniline colloids were characterized in terms of their chemical composition, particle size, morphol. and conductivity by various techniques, including elemental microanalyses, IR spectroscopy, visible absorption spectroscopy, disk centrifuge photosedimentometry, TEM, and d.c. conductivity The colloidal polyaniline dispersions were developed to improve processability of the conducting polymers.
ST polystyrenesulfonate steric stabilizer polyaniline colloid; polymethacrylate cationic stabilizer polyaniline conducting polymer
IT Polymer morphology
(dispersed particle; preparation of reactive polyelectrolyte stabilizers and of polyaniline colloids and morphol. and conductivity of dispersions)
IT Colloids
Electric conductivity
**Optical** absorption
Particle size
Polyelectrolytes
Stabilizing agents
(preparation of reactive polyelectrolyte stabilizers and of polyaniline colloids and morphol. and conductivity of dispersions)
IT Conducting polymers
Polyanilines
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(preparation of reactive polyelectrolyte stabilizers and of polyaniline colloids and morphol. and conductivity of dispersions)
IT 124296-58-8P, 2-(Dimethylamino)ethyl methacrylate-N-phenylmaleimide copolymer 190206-71-4P, 4-Aminostyrene-2-sulfo-1-dimethylethylacrylamide copolymer 190206-72-5P, 4-Aminostyrene-sodium 4-styrenesulfonate copolymer 190206-73-6P, 4-Aminostyrene-2-sulfoethylmethacrylate copolymer 190206-74-7P, 4-Aminostyrene-4-styrenecarboxylic acid copolymer 190206-75-8P, 2-(Dimethylamino)ethyl methacrylate-4-aminostyrene copolymer **190206-76-9P**, N-Phenylmaleimide-2-sulfo-1-dimethylethylacrylamide copolymer 190206-77-0P, N-Phenylmaleimide-sodium 4-styrenesulfonate copolymer 190206-78-1P, N-Phenylmaleimide-2-sulfoethylmethacrylate copolymer 190206-79-2P, N-Phenylmaleimide-4-

styrenecarboxylic acid copolymer
RL: MOA (Modifier or additive use); **SPN (Synthetic preparation); PREP (Preparation)**; USES (Uses)
(preparation of reactive polyelectrolyte stabilizers and of polyaniline colloids and morphol. and conductivity of dispersions)

IT 25233-30-1P, Polyaniline
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(preparation of reactive polyelectrolyte stabilizers and of polyaniline colloids and morphol. and conductivity of dispersions)

RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD

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(2) Armes, S; Langmuir 1990, V6, P1745 HCAPLUS
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(6) Beadle, P; Polymer 1993, V34, P1561 HCAPLUS
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(26) Stejskal, J; Polym Commun 1992, V33(22), P4857 HCAPLUS
(27) Stejskal, J; Synth Met 1993, V61, P225 HCAPLUS
(28) Tadros, P; J Mater Chem 1992, V2, P125 HCAPLUS
(29) Vincent, B; J Chem Soc, Chem Commun 1990, P683 HCAPLUS

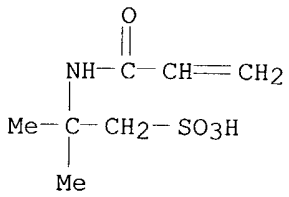
IT **190206-76-9P**, N-Phenylmaleimide-2-sulfo-1-dimethylethylacrylamide copolymer
RL: MOA (Modifier or additive use); **SPN (Synthetic preparation); PREP (Preparation)**; USES (Uses)
(preparation of reactive polyelectrolyte stabilizers and of polyaniline colloids and morphol. and conductivity of dispersions)

RN 190206-76-9 HCAPLUS

CN 1-Propanesulfonic acid, 2-methyl-2-[(1-oxo-2-propenyl)amino]-, polymer with 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

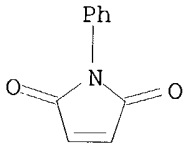
CM 1

CRN 15214-89-8
CMF C7 H13 N O4 S



CM 2

CRN 941-69-5
CMF C10 H7 N O2



L29 ANSWER 10 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1996:241759 HCAPLUS
DN 124:319770
ED Entered STN: 25 Apr 1996
TI Thermosetting resin compositions for protective films for color filters
IN Uruno, Michio; Kobayashi, Akihiro; Kotani, Masahiro
PA Hitachi Chemical Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08L033-06
ICS C08F220-32; C08F222-38; C09D133-06; G02B005-20; G02F001-1335
CC 42-7 (Coatings, Inks, and Related Products)
Section cross-reference(s): 37, 38
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 08027348 | A2 | 19960130 | JP 1994-167609 | 19940720 |
| PRAI JP 1994-167609 | | 19940720 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 08027348 | ICM | C08L033-06 |
| | ICS | C08F220-32; C08F222-38; C09D133-06; G02B005-20; G02F001-1335 |

AB Title compns. with good water, chemical, solvent, heat, and light resistance, contain copolymers of 10-40% (meth)acrylates having C7-20 alicyclic groups containing tertiary C bonded with esters and 60-90% glycidyl (meth)acrylates and copolymers of N-substituted maleimides and (meth)acrylic acids. Thus, 60:140 tricyclo[5.2.1.0]decan-8-yl methacrylate-glycidyl methacrylate copolymer 100, 120:40:40 N-phenylmaleimide-methacrylic acid-Me methacrylate copolymer 110, trimellitic anhydride 6.7, and silane coupling agents 2.0 parts were mixed at room temperature, coated on a glass plate, and

heated at 160° for 1 h to give a test piece showing cross-cut adhesion 100/100 (JIS K 5400) and light **transparency** ≥95%.

ST thermosetting resin protective coating color filter; **transparency** glycidyl methacrylate copolymer coating; water resistance coating acrylate polymer; cyclodecanyl methacrylate copolymer coating; maleimide phenyl copolymer coating; methacrylate copolymer coating color filter

IT Plastics
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(water-resistant thermosetting resin coatings containing glycidyl (meth)acrylate copolymers and maleimide copolymers for protection of color filters)

IT Coating materials
(**transparent**, water-resistant thermosetting resin coatings containing glycidyl (meth)acrylate copolymers and maleimide copolymers for protection of color filters)

IT 147814-52-6P, Glycidyl methacrylate-tricyclo[5.2.1.02,6]decan-8-yl methacrylate copolymer 148802-82-8P, Methacrylic acid-N-phenylmaleimide-tricyclo[5.2.1.02,6]decan-8-yl methacrylate copolymer 162303-68-6P, Glycidyl methacrylate-norbornyl methacrylate copolymer 171063-32-4P, N-Cyclohexylmaleimide-methacrylic acid-methyl methacrylate copolymer 172920-09-1P, Glycidyl methacrylate-isobornyl methacrylate copolymer 174803-47-5P, Bornyl methacrylate-glycidyl methacrylate copolymer **176372-75-1P**, Ethyl acrylate-methacrylic acid-N-phenylmaleimide copolymer
RL: **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
(water-resistant thermosetting resin coatings containing glycidyl (meth)acrylate copolymers and maleimide copolymers for protection of color filters)

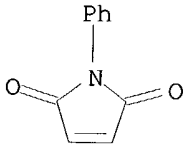
IT **176372-75-1P**, Ethyl acrylate-methacrylic acid-N-phenylmaleimide copolymer
RL: **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
(water-resistant thermosetting resin coatings containing glycidyl (meth)acrylate copolymers and maleimide copolymers for protection of color filters)

RN 176372-75-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with ethyl 2-propenoate and 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

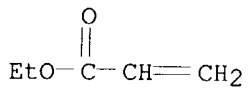
CM 1

CRN 941-69-5
CMF C10 H7 N O2



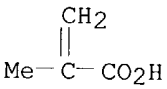

CM 2

CRN 140-88-5
CMF C5 H8 O2



CM 3

CRN 79-41-4
CMF C4 H6 O2



L29 ANSWER 11 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:994300 HCAPLUS
DN 124:30717
ED Entered STN: 22 Dec 1995
TI Copolymers of unsaturated imides and alkenyl isocyanates and their derivatives for use as nonlinear **optical** materials
IN Beckmann, Stefan; Zentel, Rudolf; Doerr, Michael; Eich, Manfred
PA BASF A.-G., Germany
SO Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DT Patent
LA German
IC ICM C08F222-40
ICS C08F226-02; C09K019-38; C08F008-00; G02F001-35
CC 35-10 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 37
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 671421 | A1 | 19950913 | EP 1995-103026 | 19950303 |
| | EP 671421 | B1 | 19970521 | | |
| | R: DE, FR, GB, IT | | | | |
| | DE 4408199 | A1 | 19950914 | DE 1994-4408199 | 19940311 |
| | US 5502135 | A | 19960326 | US 1995-401612 | 19950309 |
| | JP 07258354 | A2 | 19951009 | JP 1995-51541 | 19950310 |
| PRAI | DE 1994-4408199 | A | 19940311 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| EP 671421 | ICM | C08F222-40 |
| | ICS | C08F226-02; C09K019-38; C08F008-00; G02F001-35 |
| US 5502135 | ECLA | C08F008/00; C08F008/00; C08F008/30; C08F008/30; C08F222/40; C08F226/02; |

AB Vinyl isocyanate is copolymd. with a maleimide derivative such as N-phenyl-, N-butyl-, or N-(diphenylmethyl)maleimide, and the resulting isocyanate group-containing copolymers are reacted with a hydroxy-containing chromophore such

as HOCH2CH2NEtZN:NZNO2, HOCH2CH2OZZNO2, or HOCH2CH2OZNO2 (Z = p-phenylene) to prepare derivs. for use as nonlinear **optical** materials.

ST vinyl isocyanate copolymer deriv nonlinear **optical**; maleimide isocyanatoethene copolymer deriv nonlinear **optical**; nitrobenzene deriv polymer nonlinear **optical**; nitroazobenzene deriv polymer nonlinear **optical**; azobenzene deriv polymer nonlinear **optical**; polymn isocyanatoethene maleimide deriv

IT Azo compounds
Imides
Nitro compounds
Urethane polymers, preparation
Urethanes
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PRP (Properties); PREP (Preparation); USES (Uses)
(preparation of maleimide-vinyl isocyanate copolymer derivs. for use as nonlinear **optical** materials)

IT **Optical** materials
(nonlinear, preparation of maleimide-vinyl isocyanate copolymer derivs. as)

IT 159624-83-6P, N-Butylmaleimide-vinyl isocyanate alternating copolymer 159624-84-7P, N-(Diphenylmethyl)maleimide-vinyl isocyanate alternating copolymer **159624-85-8P**, N-Phenylmaleimide-vinyl isocyanate alternating copolymer 171771-13-4P, N-(1-Naphthyl)maleimide-vinyl isocyanate alternating copolymer 171771-14-5P, N-(1-Adamantyl)maleimide-vinyl isocyanate alternating copolymer 171771-15-6P, N-(9-Fluorenyl)maleimide-vinyl isocyanate alternating copolymer
RL: **IMF (Industrial manufacture)**; NUU (Other use, unclassified); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent); USES (Uses)
(preparation and reaction with hydroxy-containing chromophores)

IT 2872-52-8DP, 1-[N-Ethyl-N-(2-hydroxyethyl)amino]-4-(4-nitrophenylazo)benzene, reaction products with N-substituted maleimide-vinyl isocyanate copolymers 16365-27-8DP, reaction products with N-substituted maleimide-vinyl isocyanate copolymers 123390-59-0DP, reaction products with N-substituted maleimide-vinyl isocyanate copolymers 159624-83-6DP, reaction products with hydroxyalkyl group-containing chromophores 159624-84-7DP, reaction products with hydroxyalkyl group-containing chromophores **159624-85-8DP**, reaction products with hydroxy-containing chromophores 171771-13-4DP, reaction products with hydroxyalkyl group-containing chromophores 171771-14-5DP, reaction products with hydroxyalkyl group-containing chromophores 171771-15-6DP, reaction products with hydroxyalkyl group-containing chromophores
RL: **IMF (Industrial manufacture)**; NUU (Other use, unclassified); PRP (Properties); **PREP (Preparation)**; USES (Uses)
(preparation and use as nonlinear **optical** materials)

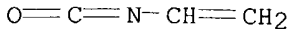
IT **159624-85-8P**, N-Phenylmaleimide-vinyl isocyanate alternating copolymer
RL: **IMF (Industrial manufacture)**; NUU (Other use, unclassified); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent); USES (Uses)
(preparation and reaction with hydroxy-containing chromophores)

RN 159624-85-8 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with isocyanatoethene, alternating (9CI) (CA INDEX NAME)

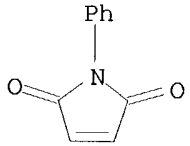
CM 1

CRN 3555-94-0
CMF C3 H3 N O



CM 2

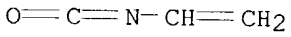
CRN 941-69-5
CMF C10 H7 N O2



IT **159624-85-8DP**, reaction products with hydroxy-containing chromophores
RL: **IMF (Industrial manufacture)**; NUU (Other use, unclassified);
PRP (Properties); **PREP (Preparation)**; USES (Uses)
(preparation and use as nonlinear **optical** materials)
RN 159624-85-8 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with isocyanatoethene, alternating (9CI) (CA INDEX NAME)

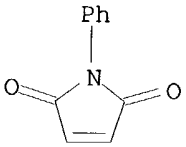
CM 1

CRN 3555-94-0
CMF C3 H3 N O



CM 2

CRN 941-69-5
CMF C10 H7 N O2



L29 ANSWER 12 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:838910 HCAPLUS
DN 123:316421
ED Entered STN: 07 Oct 1995
TI Optical devices composed of heat-resistant methyl methacrylate-N-arylmaleimide copolymers
IN Nakai, Yoshio; Sato, Fumio
PA Mitsubishi Rayon Co, Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F220-14
ICS C08F222-40; G02B001-04; G11B007-24
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 73
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 07179527 | A2 | 19950718 | JP 1994-258160 | 19941024 |
| | JP 2778917 | B2 | 19980723 | | |
| PRAI | JP 1994-258160 | | 19941024 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 07179527 | ICM | C08F220-14 |
| | ICS | C08F222-40; G02B001-04; G11B007-24 |

AB The title devices with improved heat resistance and transparency comprise heat-resistant copolymers with intrinsic viscosity 0.3-1.0 dL/g in chloroform at 25° composed of 70-99% Me methacrylate (I) units and 1-30% N-arylmaleimide (II) units where residual I contents are ≤1.0% and residual II contents are ≤0.3% . Thus, 1800 g a solution containing I 80, N-(2-chlorophenyl)maleimide 20, octyl mercaptan 0.23, and AIBN 0.1 part was added to water containing 0.54 g poly(2-sodiosulfoethyl methacrylate) and 9 g Na2SO4, suspension polymerized at 80°, and dried to give polymer beads, 100 parts of which was added to 500 parts MeOH, heated at 40°, filtered, dried, and extrusion molded at 250° to give transparent pellets with intrinsic viscosity 0.53 dL/g. A pressure-molded test piece showed notched Izod impact strength 1.2 kg-cm/cm, heat distortion temperature 120°, and Vicat softening temperature 137°. A lens molded from the pellets at 250° showed refractive index 1.517, dispersion νD 47.8, and Izod impact strength 1.2 kg-cm/cm.

ST optical lens methacrylic resin transparency; arylmaleimide copolymer optical lens; heat resistance PMMA arylmaleimide lens; impact resistance PMMA arylmaleimide lens

IT Polyimides, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(arylmaleimide-based; heat- and impact-resistant transparent optical lenses composed of Me methacrylate-N-arylmaleimide copolymers)

IT Lenses
(heat- and impact-resistant transparent optical lenses composed of Me methacrylate-N-arylmaleimide copolymers)

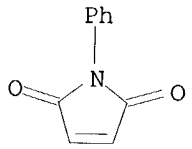
IT **32554-23-7P**, Methyl methacrylate-N-phenylmaleimide copolymer **38807-39-5P**, N-(2-Chlorophenyl)maleimide-methyl methacrylate copolymer
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(heat- and impact-resistant **transparent optical** lenses composed of Me methacrylate-N-arylmaleimide copolymers)

IT **32554-23-7P**, Methyl methacrylate-N-phenylmaleimide copolymer **38807-39-5P**, N-(2-Chlorophenyl)maleimide-methyl methacrylate copolymer
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(heat- and impact-resistant **transparent optical** lenses composed of Me methacrylate-N-arylmaleimide copolymers)

RN 32554-23-7 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

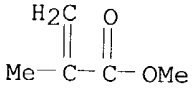
CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

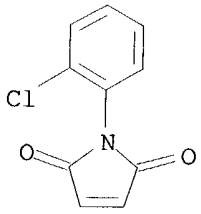
CRN 80-62-6
CMF C5 H8 O2



RN 38807-39-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2-chlorophenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

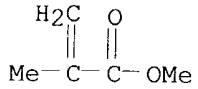
CM 1

CRN 1203-24-3
CMF C10 H6 Cl N O2



CM 2

CRN 80-62-6
CMF C5 H8 O2



L29 ANSWER 13 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:808278 HCAPLUS
DN 123:270881
ED Entered STN: 23 Sep 1995
TI **Optical** recording medium with methacrylate copolymer
IN Hasegawa, Hideki; Kojima, Yumiko; Masuda, Seiji; Sasaki, Shigeaki; Tono, Kanako
PA Mitsubishi Rayon Co, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G11B007-24
ICS G11B007-24; B41M005-26
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 37, 38
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 07153114 | A2 | 19950616 | JP 1993-295575 | 19931125 |
| PRAI JP 1993-295575 | | 19931125 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 07153114 | ICM | G11B007-24 |
| | ICS | G11B007-24; B41M005-26 |

AB A substrate, which consists of a copolymer of specific viscosity of 0.3-1.0 dL/g in CHCl3 at 25° formed by polymerization of monomer mixture containing ≤65 mol% methacrylate ester, acrylate ester, and 10-40 weight% maleimide, is coated with an inorg. thin film by sputtering to obtain the **optical** medium. The medium shows good forming property of the substrate and improved adhesion with sputtering-formed recording or reflecting film.

ST **optical** recording medium methacrylate ester copolymer; sputtering inorg film **optical** recording; maleimide methacrylate acrylate copolymer **optical** recording

IT Recording materials
(**optical**, **optical** recording medium with methacrylate copolymer substrate)

IT **109169-06-4P**, Methyl acrylate-methyl methacrylate-N-phenylmaleimide copolymer 113812-43-4P, N-Cyclohexylmaleimide-methyl acrylate-methyl methacrylate copolymer 169121-89-5P, Cyclohexyl acrylate-N-cyclohexylmaleimide-methyl acrylate-methyl methacrylate copolymer
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(**optical** recording medium with methacrylate copolymer substrate)

IT 7429-90-5, Aluminum, uses 7631-86-9, Silicon dioxide, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(sputtering film, recording layer; **optical** recording medium

with methacrylate copolymer substrate)

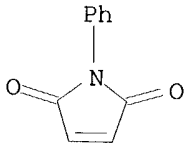
IT **109169-06-4P**, Methyl acrylate-methyl methacrylate-N-phenylmaleimide copolymer
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(**optical** recording medium with methacrylate copolymer substrate)

RN 109169-06-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with methyl 2-propenoate and 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

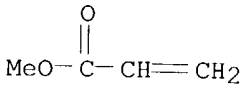
CM 1

CRN 941-69-5
CMF C10 H7 N O2



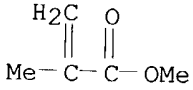
CM 2

CRN 96-33-3
CMF C4 H6 O2



CM 3

CRN 80-62-6
CMF C5 H8 O2



L29 ANSWER 14 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:792803 HCAPLUS
DN 123:170610
ED Entered STN: 15 Sep 1995
TI Maleimide copolymer and resin composition containing the same with good **transparency**, heat resistance, mechanical strength, and workability
IN Mori, Hiroshi; Ii, Yasuaki; Yokohama, Hisaya; Tsuneshige, Yasunori; Fujii, Seizou; Nakazato, Takanori
PA Mitsubishi Rayon Co., Ltd., Japan

SO PCT Int. Appl., 67 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM C08F212-04
ICS C08F222-40; C08L025-00; C08L035-00; C08L051-04
CC 35-4 (Chemistry of Synthetic High Polymers)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 9518837 | A1 | 19950713 | WO 1995-JP13 | 19950110 |
| | W: AU, CN, KR, US | | | | |
| | RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| | JP 07206938 | A2 | 19950808 | JP 1994-989 | 19940110 |
| | JP 3297180 | B2 | 20020702 | | |
| | JP 07268153 | A2 | 19951017 | JP 1994-65147 | 19940401 |
| | JP 3428130 | B2 | 20030722 | | |
| | JP 08048840 | A2 | 19960220 | JP 1994-201545 | 19940804 |
| | JP 3422847 | B2 | 20030630 | | |
| | AU 9513920 | A1 | 19950801 | AU 1995-13920 | 19950110 |
| | AU 683128 | B2 | 19971030 | | |
| | EP 688798 | A1 | 19951227 | EP 1995-905236 | 19950110 |
| | EP 688798 | B1 | 19990818 | | |
| | EP 688798 | B2 | 20030827 | | |
| | R: DE, FR, GB, IT | | | | |
| | CN 1122141 | A | 19960508 | CN 1995-190019 | 19950110 |
| | CN 1081196 | B | 20020320 | | |
| | JP 08073701 | A2 | 19960319 | JP 1995-161580 | 19950606 |
| | JP 2999944 | B2 | 20000117 | | |
| | US 5948879 | A | 19990907 | US 1997-957588 | 19971024 |
| PRAI | JP 1994-989 | A | 19940110 | | |
| | JP 1994-65147 | A | 19940401 | | |
| | JP 1994-170358 | A | 19940630 | | |
| | JP 1994-201545 | A | 19940804 | | |
| | WO 1995-JP13 | W | 19950110 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| WO 9518837 | ICM | C08F212-04 |
| | ICS | C08F222-40; C08L025-00; C08L035-00; C08L051-04 |

AB A maleimide copolymer comprises maleimide monomer units, aromatic vinyl monomer units and other vinyl monomer units (residual maleimide content ≤0.1%, volatiles other than maleimide ≤0.5%, the content of a compound obtained from at least one monomer selected from the group consisting of a maleimide monomer, aromatic vinyl monomers and other vinyl monomers and having a Mw 200-1,000 as determined by gel permeation chromatog. 2-10%, the copolymer yellowness index ≤30, and the copolymer intrinsic viscosity 0.3 to 1.5), and a maleimide resin composition comprises the above copolymer and a rubbery graft polymer. A copolymer of 70% N-phenylmaleimide, 24% styrene, and 6% acrylonitrile with intrinsic viscosity 0.68 dL/g, yellowness index 25, Vicat softening temperature 137°, and spiral flow length 28 cm was prepared and blended 70:30 with ABS graft copolymer.

ST maleimide copolymer heat resistant; moldable maleimide copolymer
IT Plastics
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(maleimide copolymer and resin composition containing the same with good **transparency**, heat resistance, mech. strength, and workability)
IT 106677-58-1P, ABS graft copolymer 110083-38-0P, Acrylonitrile-allyl

methacrylate-butadiene-butyl acrylate-methacrylic acid-styrene graft copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); PREP (Preparation); USES (Uses)
(maleimide copolymer and resin composition containing the same with good **transparency**, heat resistance, mech. strength, and workability)

IT 31621-07-5P, Acrylonitrile-N-phenylmaleimide-styrene copolymer
**88077-73-0P**, Acrylonitrile-N-phenylmaleimide copolymer
RL: **IMF (Industrial manufacture)**; PRP (Properties); **PREP (Preparation)**
(maleimide copolymer and resin composition containing the same with good **transparency**, heat resistance, mech. strength, and workability)

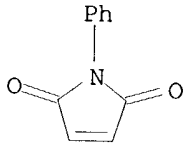
IT 9003-54-7, Acrylonitrile-styrene copolymer 118915-68-7
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(maleimide copolymer and resin composition containing the same with good **transparency**, heat resistance, mech. strength, and workability)

IT **88077-73-0P**, Acrylonitrile-N-phenylmaleimide copolymer
RL: **IMF (Industrial manufacture)**; PRP (Properties); **PREP (Preparation)**
(maleimide copolymer and resin composition containing the same with good **transparency**, heat resistance, mech. strength, and workability)

RN 88077-73-0 HCAPLUS
CN 2-Propenenitrile, polymer with 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

CRN 107-13-1
CMF C3 H3 N

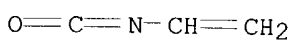
$H_2C{=}CH{-}C{\equiv}N$

L29 ANSWER 15 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:234423 HCAPLUS
DN 122:240564
ED Entered STN: 08 Dec 1994
TI Polymers with nonlinear **optical** properties and high glass transition temperatures by functionalization of reactive precursors
AU Dorr, Michael; Zentel, Rudolf
CS Inst. Organische Chemie, Univ. Mainz, Mainz, D-55099, Germany
SO Macromolecular Rapid Communications (1994), 15(12), 935-42
CODEN: MRCOE3; ISSN: 1022-1336

PB Huethig & Wepf
DT Journal
LA English
CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 73
AB Radical copolymn. of vinyl isocyanate with N-substituted maleimides, i.e., N-butylmaleimide, N-(diphenylmethyl)maleimide, and N-phenylmaleimide, in toluene at 70° using 2,2'-azoisobutyronitrile as the initiator gave alternating copolymers that were functionalized by reaction with alcs., i.e., EtOH or MeOH, and then C.I. Disperse Red 1. The degree of functionalization was strongly determined by the solubility of the precursor polymer. The high glass transition temps. of the polymers and the stability of their nonlinear **optical** properties indicate that these polymers have potential for use in **optical** devices.
ST vinyl isocyanate nonlinear **optical** copolymer; maleimide deriv nonlinear **optical** copolymer; nonlinear **optical** polymer prepn property; radical polymn vinyl isocyanate maleimide
IT **Optical** nonlinear property
(of maleimide derivative-vinyl isocyanate copolymers functionalized with C.I. Disperse Red 1)
IT Dielectric relaxation
(of poled maleimide derivative-vinyl isocyanate copolymers functionalized with C.I. Disperse Red 1)
IT Polymerization
(radical, of maleimide derivs. with vinyl isocyanate in nonlinear **optical** polymer preparation)
IT 159624-84-7P
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(polymers with nonlinear **optical** properties and high glass transition temps. by functionalization of reactive precursors)
IT 64-17-5DP, Ethanol, reaction products with maleimide derivative-vinyl isocyanate copolymers 67-56-1DP, Methanol, reaction products with maleimide derivative-vinyl isocyanate copolymers 2872-52-8DP, C.I. Disperse Red 1, reaction products with maleimide derivative-vinyl isocyanate copolymers 159624-83-6DP, reaction products with C.I. Disperse Red 1 and methanol 159624-84-7DP, reaction products with C.I. Disperse Red 1 and methanol **159624-85-8DP**, reaction products with C.I. Disperse Red 1 and methanol
RL: PRP (Properties); **SPN (Synthetic preparation); PREP (Preparation)**
(polymers with nonlinear **optical** properties and high glass transition temps. by functionalization of reactive precursors)
IT 159624-83-6P **159624-85-8P**
RL: PRP (Properties); RCT (Reactant); **SPN (Synthetic preparation) ; PREP (Preparation)**; RACT (Reactant or reagent)
(preparation and functionalization of via polymer-analogous reactions with alkyl alcs. and nonlinear **optical** chromophores)
IT **159624-85-8DP**, reaction products with C.I. Disperse Red 1 and methanol
RL: PRP (Properties); **SPN (Synthetic preparation); PREP (Preparation)**
(polymers with nonlinear **optical** properties and high glass transition temps. by functionalization of reactive precursors)
RN 159624-85-8 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with isocyanatoethene, alternating (9CI) (CA INDEX NAME)

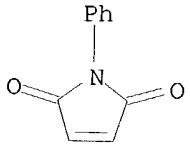
CM 1

CRN 3555-94-0
CMF C3 H3 N O



CM 2

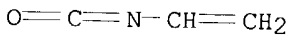
CRN 941-69-5
CMF C10 H7 N O2



IT **159624-85-8P**
RL: PRP (Properties); RCT (Reactant); **SPN (Synthetic preparation)** ; **PREP (Preparation)**; RACT (Reactant or reagent)
(preparation and functionalization of via polymer-analogous reactions with alkyl alcs. and nonlinear **optical** chromophores)
RN 159624-85-8 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with isocyanatoethene, alternating (9CI) (CA INDEX NAME)

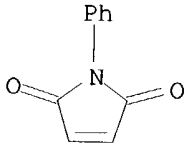
CM 1

CRN 3555-94-0
CMF C3 H3 N O



CM 2

CRN 941-69-5
CMF C10 H7 N O2



L29 ANSWER 16 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1993:627195 HCAPLUS
DN 119:227195
ED Entered STN: 27 Nov 1993

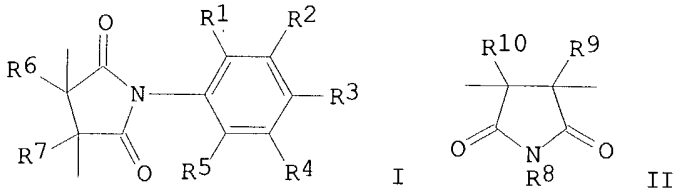
TI Maleimide-olefin copolymers and optical materials
IN Yukioka, Satoshi; Tamai, Yoshinori; Ishikawa, Noryuki
PA Tosoh Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F222-40
ICS C08F210-00
CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 38
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 05117334 | A2 | 19930514 | JP 1991-303911 | 19911024 |
| PRAI JP 1991-303911 | | 19911024 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 05117334 | ICM | C08F222-40 |
| | ICS | C08F210-00 |

GI




I




II

AB The title copolymers with weight-average mol. weight 1000-5,000,000 comprise N-phenylmaleimide units I (R1-R7 = H, halo, CO2H, C1-8 alkyl), N-alkylmaleimide units II (R8-R10 = H, halo, CO2H, C1-8 alkyl), and 2-70 mol % α-olefin units CHR13CR11R12 (R11-13 = H, C1-6 alkyl). The copolymers have good transparency and heat resistance and low birefringence. A 1:1 (mol) N-(2,6-diethylphenyl)maleimide-isobutene copolymer showed light transmittance 92%, refractive index 1.550, and glass temperature 204°.

ST maleimide olefin copolymer optical material; transparency maleimide olefin copolymer; heat resistance maleimide olefin copolymer; refractive index maleimide olefin copolymer; isobutene maleimide copolymer optical material; phenylmaleimide isobutene copolymer optical material; birefringence redn isobutene maleimide copolymer; diethylphenylmaleimide isobutene copolymer optical material

IT Birefringence
(maleimide derivative-olefin copolymers with low, for optical materials)

IT Transparent materials
(maleimide derivative-olefin copolymers, with low birefringence)

IT Refractive index and Optical refraction
(of maleimide derivative-olefin copolymers, with low birefringence)

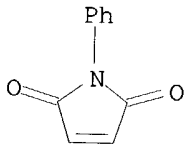
IT **30523-66-1 30523-68-3 150570-57-3 150940-15-1 150940-16-2**
RL: PRP (Properties)
(**transparent**, heat-resistant, for **optical** materials with low birefringence)

IT **30523-66-1 30523-68-3 150570-57-3**
**150940-15-1 150940-16-2**
RL: PRP (Properties)
(**transparent**, heat-resistant, for **optical** materials
with low birefringence)

RN 30523-66-1 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 2-methyl-1-propene (9CI)
(CA INDEX NAME)

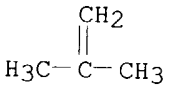
CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

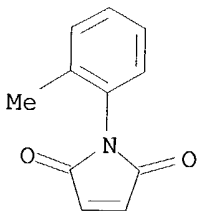
CRN 115-11-7
CMF C4 H8



RN 30523-68-3 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-(2-methylphenyl)-, polymer with 2-methyl-1-propene
(9CI) (CA INDEX NAME)

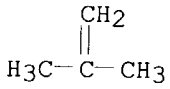
CM 1

CRN 4067-01-0
CMF C11 H9 N O2



CM 2

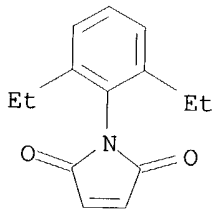
CRN 115-11-7
CMF C4 H8



RN 150570-57-3 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-(2,6-diethylphenyl)-, polymer with 2-methyl-1-propene and 1-methyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

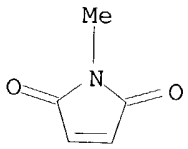
CM 1

CRN 38167-72-5
CMF C14 H15 N O2



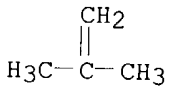
CM 2

CRN 930-88-1
CMF C5 H5 N O2



CM 3

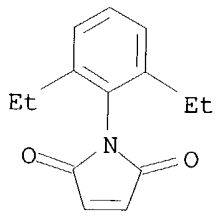
CRN 115-11-7
CMF C4 H8



RN 150940-15-1 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-(2,6-diethylphenyl)-, polymer with 2-methyl-1-propene (9CI) (CA INDEX NAME)

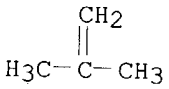
CM 1

CRN 38167-72-5
CMF C14 H15 N O2



CM 2

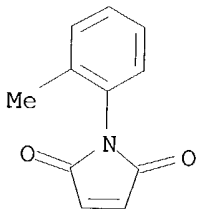
CRN 115-11-7
CMF C4 H8



RN 150940-16-2 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-methyl-, polymer with 1-(2-methylphenyl)-1H-pyrrole-2,5-dione and 2-methyl-1-propene (9CI) (CA INDEX NAME)

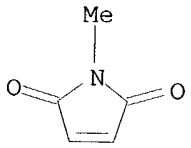
CM 1

CRN 4067-01-0
CMF C11 H9 N O2



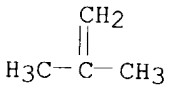
CM 2

CRN 930-88-1
CMF C5 H5 N O2



CM 3

CRN 115-11-7
CMF C4 H8



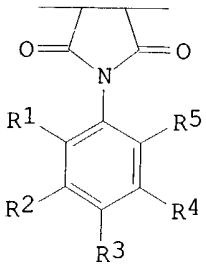
L29 ANSWER 17 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1993:582171 HCAPLUS
DN 119:182171
ED Entered STN: 30 Oct 1993
TI Glass-filled N-phenylmaleimide-olefin polymers with excellent **transparency** and their uses as automotive parts
IN Yukioka, Satoshi; Doi, Tooru
PA Tosoh Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08L023-02
ICS C08K003-40; C08K007-14; C08L035-00
CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 38
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 05140375 | A2 | 19930608 | JP 1991-329690 | 19911120 |
| | JP 3208810 | B2 | 20010917 | | |
| PRAI | JP 1991-329690 | | 19911120 | | |

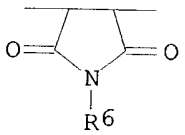
CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 05140375 | ICM | C08L023-02 |
| | ICS | C08K003-40; C08K007-14; C08L035-00 |

GI



I



II

AB Heat- and impact-resistant title compns. with difference of refractive index (RI) of the glass fillers and that of the polymers ≤0.01 comprise (A) 30-99% polymers [polystyrene-based weight-average mol. weight (Mw) 1 + 103 to 5 + 106] composed of 30-98 mol% N-phenylmaleimide derivative units I (R1-5 = H, C1-6 alkyl, C1-6 alkoxy, halo) and N-alkylmaleimide units II (R6 = C1-18 alkyl, C3-12 cycloalkyl) at I/II ratio 100/0-1/99, 2-70 mol% units CHR7CR8R9 (R7-9 = H, C1-8 alkyl), and 0-40 mol% other comonomer units and (B) 1-70% glass fillers and are used for automotive parts. Thus, treating 2000 g N-(2,6-diethylphenyl)maleimide, 1110 g N-methylmaleimide, and 8 L isobutene at 60° for 8 h in PhMe in the presence of AIBN gave a polymer (Mw 240,000, RI 1.543), 1.4 kg of which was blended with 0.6 kg aminosilane-treated glass filler (RI 1.540), pelletized, and injection molded to give a test piece showing light transmittance 88%, heat distortion temperature 175°, linear expansion coefficient 3.0 + 10-5 cm/cm-°C, bending strength 1200 kg/cm2, and impact strength 4 kg-cm/cm.

ST ethylphenylmaleimide methylmaleimide isobutene polymer **transparency**; heat resistance phenylmaleimide olefin polymer; impact resistance maleimide polymer; dimensional stability maleimide polymer; glass filler maleimide polymer **transparency**; automobile part maleimide polymer

IT Glass fibers, uses
RL: USES (Uses)
(fillers, for N-phenylmaleimide polymers, with good **transparency** and heat and impact resistance)

IT Heat-resistant materials
Impact-resistant materials
**Transparent** materials
(glass-filled N-phenylmaleimide polymers as)

IT Automobiles
(parts, glass-filled N-phenylmaleimide polymers for, with good **transparency** and heat and impact resistance)

IT Alkenes, polymers
RL: USES (Uses)
(polymers, with N-phenylmaleimides, glass-filled, with good **transparency** and heat and impact resistance)

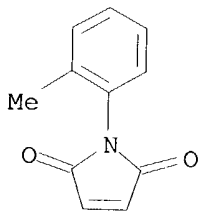
IT **30523-68-3P** 150570-57-3P
RL: **PREP (Preparation)**
(preparation of, glass-filled, with good **transparency** and heat and impact resistance, for automotive parts)

IT **30523-68-3P**
RL: **PREP (Preparation)**
(preparation of, glass-filled, with good **transparency** and heat and

impact resistance, for automotive parts)
RN 30523-68-3 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-(2-methylphenyl)-, polymer with 2-methyl-1-propene (9CI) (CA INDEX NAME)

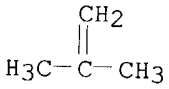
CM 1

CRN 4067-01-0
CMF C11 H9 N O2




CM 2

CRN 115-11-7
CMF C4 H8




L29 ANSWER 18 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1991:165116 HCAPLUS
DN 114:165116
ED Entered STN: 03 May 1991
TI Heat-resistant **transparent** vinyl chloride copolymers
IN Fujii, Noriki; Shibazaki, Yukio; Kato, Masaharu
PA Sekisui Chemical Co. Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F214-06
ICS C08F002-44
CC 35-4 (Chemistry of Synthetic High Polymers)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 02229812 | A2 | 19900912 | JP 1989-51247 | 19890302 |
| PRAI | JP 1989-51247 | | 19890302 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 02229812 | ICM | C08F214-06 |
| | ICS | C08F002-44 |

AB The title copolymers are prepared by polymerizing vinyl chloride (I), and

optionally comonomers, with N-arylmaleimides which are added stepwise, and, after copolymn., adding antioxidants in the presence of I. Thus, suspension polymerization of 3.6 kg I with addition of forty 26.8-g portions of N-phenylmaleimide (II) at 5-min intervals and adding 18 g BHT with the remaining I gave a 70:30 I-II copolymer which, when compounded, had bending temperature 105°, yellowness index 30, and light transmittance 93%; vs. 78, 150, and 35, resp., when II was added in a single portion.

ST vinyl chloride copolymer heat resistance; maleimide deriv copolymer; phenylmaleimide copolymer vinyl chloride; polymn suspension chloroethene arylmaleimide

IT Antioxidants
(for vinyl chloride-arylmaleimide copolymers, addition of, in polymerization)

IT Polymerization
(suspension, of vinyl chloride with arylmaleimides, with stepwise addition of imides)

IT 123-28-4, Dilaurylthiodipropionate 128-37-0, 2,6-Di-tert-butyl-p-cresol, uses and miscellaneous 135-88-6, Phenyl-β-naphthylamine
RL: USES (Uses)
(antioxidants, for vinyl chloride-arylmaleimide copolymers)

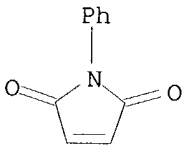
IT **27903-37-3P**, N-Phenylmaleimide-vinyl chloride copolymer
**35641-19-1P**, N-o-Chlorophenylmaleimide-vinyl chloride copolymer
35641-20-4P **131577-69-0P**
RL: **PREP (Preparation)**
(preparation of heat-resistant and **transparent**)

IT **27903-37-3P**, N-Phenylmaleimide-vinyl chloride copolymer
**35641-19-1P**, N-o-Chlorophenylmaleimide-vinyl chloride copolymer
**131577-69-0P**
RL: **PREP (Preparation)**
(preparation of heat-resistant and **transparent**)

RN 27903-37-3 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with chloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

CRN 75-01-4
CMF C2 H3 Cl

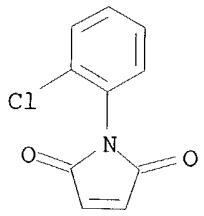
$H_2C{=}CH{-}Cl$

RN 35641-19-1 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-(2-chlorophenyl)-, polymer with chloroethene (9CI)

(CA INDEX NAME)

CM 1

CRN 1203-24-3
CMF C10 H6 Cl N O2



CM 2

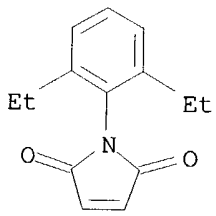
CRN 75-01-4
CMF C2 H3 Cl

$H_2C{=}CH{-}Cl$

RN 131577-69-0 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-(2,6-diethylphenyl)-, polymer with chloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 38167-72-5
CMF C14 H15 N O2



CM 2

CRN 75-01-4
CMF C2 H3 Cl

$H_2C{=}CH{-}Cl$

L29 ANSWER 19 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1991:44208 HCAPLUS
DN 114:44208
ED Entered STN: 09 Feb 1991
TI Preparation of heat-resistant vinyl chloride copolymers
IN Fujii, Noriki; Shibazaki, Yukio; Kato, Masaharu
PA Sekisui Chemical Co. Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F214-06
ICS C08F006-10
CC 37-3 (Plastics Manufacture and Processing)
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 02229811 | A2 | 19900912 | JP 1989-51246 | 19890302 |
| PRAI JP 1989-51246 | | 19890302 | | |

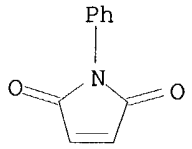
CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 02229811 | ICM | C08F214-06 |
| | ICS | C08F006-10 |

AB The title polymers having good **transparency** are prepared by polymerization of vinyl chloride (I) with arylmaleimides which are proportionally or continuously added to I, and extracting the polymers with organic solvents. Thus, heating a mixture of saponified poly(vinyl alc.) 7.2, tert-Bu peroxyneodecanoate 14.4, and I 3600 g in 12 L H2O to 50°, adding 26.8 g N-phenylmaleimide in 41.5 g acetone for 40 times at a 5 min interval, polymerizing, extracting the resulting polymers with 1:4 THF-MeOH mixture gave a polymer having softening temperature 107°, yellowing index 20, and **transparency** 93%.
ST vinyl chloride maleimide copolymer; phenylmaleimide vinyl chloride copolymer; **transparency** vinyl chloride polymer prepn; heat resistance vinyl chloride copolymer
IT **27903-37-3P**, N-Phenylmaleimide-vinyl chloride copolymer
**35641-19-1P**, N-o-Chlorophenylmaleimide-vinyl chloride copolymer
**131577-69-0P**
RL: **PREP (Preparation)**
(preparation of, **transparent**, heat-resistant)
IT **27903-37-3P**, N-Phenylmaleimide-vinyl chloride copolymer
**35641-19-1P**, N-o-Chlorophenylmaleimide-vinyl chloride copolymer
**131577-69-0P**
RL: **PREP (Preparation)**
(preparation of, **transparent**, heat-resistant)
RN 27903-37-3 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with chloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

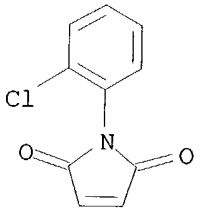
CRN 75-01-4
CMF C2 H3 Cl

$H_2C{=}CH{-}Cl$

RN 35641-19-1 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-(2-chlorophenyl)-, polymer with chloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 1203-24-3
CMF C10 H6 Cl N O2



CM 2

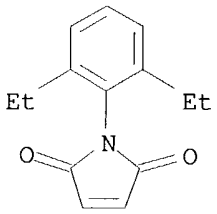
CRN 75-01-4
CMF C2 H3 Cl

$H_2C{=}CH{-}Cl$

RN 131577-69-0 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-(2,6-diethylphenyl)-, polymer with chloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 38167-72-5
CMF C14 H15 N O2




CM 2

CRN 75-01-4
CMF C2 H3 Cl

$H_2C{=}CH{-}Cl$

L29 ANSWER 20 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1990:613250 HCAPLUS
DN 113:213250
ED Entered STN: 08 Dec 1990
TI Manufacture of resins for optical applications
IN Okinaka, Takaaki; Sugawara, Seizo; Kawai, Hiromasa; Kanega, Fumiaki
PA Hitachi Chemical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F220-14
ICS C08F002-18; G02B001-04
ICA C08F222-40; G11B007-24
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 73
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 02175711 | A2 | 19900709 | JP 1989-230184 | 19890905 |
| | US 5155190 | A | 19921013 | US 1991-707280 | 19910528 |
| PRAI | JP 1988-222696 | | 19880906 | | |
| | US 1989-403387 | | 19890906 | | |

CLASS

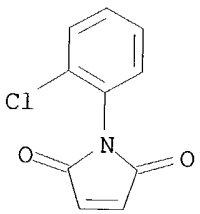
| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 02175711 | ICM | C08F220-14 |
| | ICS | C08F002-18; G02B001-04 |
| | ICA | C08F222-40; G11B007-24 |

AB Polymers, useful for manufacture of lenses and optical disk substrates, are prepared from Me methacrylate (I) 50-97, N-substituted maleimides 3-30, and vinyl monomers 0-40%. Thus, a polymer [prepared by suspension polymerization of 800 parts I and 200 parts N-(o-chlorophenyl)maleimide] molding had transparency 91%, and heat distortion temperature 91°, vs. 92.2 and 95, resp., for poly(Me methacrylate).
ST methacrylate chlorophenyl maleimide copolymer; optical disk methacrylate

copolymer; lens methacrylate copolymer
IT Lenses
(maleimide derivative-Me methacrylate copolymers for, heat-resistant)
IT Recording apparatus
(optical disks, maleimide derivative-Me methacrylate copolymers for, heat-resistant)
IT **38807-39-5P**, N-(o-Chlorophenyl) maleimide-methylmethacrylate copolymer 105469-99-6P, N-Cyclohexyl maleimide-methyl methacrylate copolymer 105899-24-9P, Cyclohexyl methacrylate-N-ethyl maleimide-methyl methacrylate copolymer 111575-20-3P, N-tert-Butyl maleimide-methyl methacrylate copolymer 130401-09-1P, N-Ethyl maleimide-norbonyl methacrylate-methyl methacrylate copolymer 130401-10-4P, N-Ethyl maleimide-methyl methacrylate-tricyclo[5,2,1,02,6]deca-8-yl methacrylate copolymer
RL: PREP (Preparation)
(preparation of **transparent** heat-resistant, for **optical** disks and lenses)
IT **38807-39-5P**, N-(o-Chlorophenyl) maleimide-methylmethacrylate copolymer
RL: PREP (Preparation)
(preparation of **transparent** heat-resistant, for **optical** disks and lenses)
RN 38807-39-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2-chlorophenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

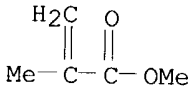
CM 1

CRN 1203-24-3
CMF C10 H6 Cl N O2




CM 2

CRN 80-62-6
CMF C5 H8 O2




L29 ANSWER 21 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1989:534959 HCAPLUS
DN 111:134959
ED Entered STN: 14 Oct 1989

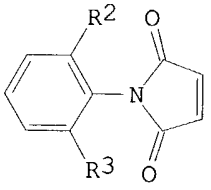
TI Preparation of heat-resistant and transparent polymers with excellent optical properties
IN Hayashi, Nobuyuki; Maeda, Tetsuo
PA Denki Kagaku Kogyo K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F220-12
ICS C08F220-12; C08F222-40
CC 35-4 (Chemistry of Synthetic High Polymers)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 01014219 | A2 | 19890118 | JP 1987-169716 | 19870709 |
| | JP 07096582 | B4 | 19951018 | | |
| PRAI | JP 1987-169716 | | 19870709 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 01014219 | ICM | C08F220-12 |
| | ICS | C08F220-12; C08F222-40 |

OS MARPAT 111:134959
GI



I

AB Polymers showing very slight yellowness on molding, useful for optic materials such as lenses, disks, and fibers, are prepared by copolymg. 30-95% CH2:CMeCO2R1 (R1 = C≥1 alkyl) with 1-60% I (R2, R3 = C≥2 alkyl) and 0-60% copolymerizable monomers. Thus, Me methacrylate (II) 30, N-(2,6-diethylphenyl)maleimide (III) 15, cyclohexanone (IV) 50, and AIBN 0.1 part were stirred at 80° for 3 h under N and a mixture of II 55, IV 60, and AIBN 0.5 part was continuously added over 5 h, and further stirred at 110° for 3 h to obtain a viscous copolymer (conversion II 99.0 and III 98.50%) solution, which was fed to the opening of a screw extruder at 240° and ≤700 mm Hg with removal of IV to obtain pelletized III-II copolymer (V, containing 0.07% III and 0.02% IV as impurities), showing glass transition temperature 121° vs. 118° for similarly prepared pelletized 85:15 II-N-phenylmaleimide (VI) copolymer (VII, containing 0.05% VI and 0.03% IV as impurities). The injection molded plates from V showed heat distortion temperature 108°, refractive index 1.513, Abbe number 53, total light transmittance 91%, haze 1.4% optical path difference 12 nm, and yellowness 0.8, compared with 106, 1.508, 44, 87, 2.7, 21, and 38.5, resp. for controls from VII.
ST heat resistance transparent copolymer; ethylphenylmaleimide methyl methacrylate copolymer
IT Transparent materials
(methacrylate-dialkylphenylmaleimide copolymers, heat-resistant, with

good optical properties)

IT Heat-resistant materials
(methacrylate-dialkylphenylmaleimide copolymers, transparent, with good optical properties)

IT **117955-60-9P 117955-63-2P**
RL: PREP (Preparation)
(preparation of, heat-resistant and **transparent**, with good **optical** properties)

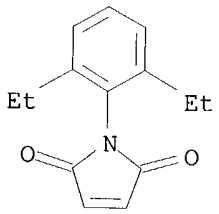
IT **117955-60-9P 117955-63-2P**
RL: PREP (Preparation)
(preparation of, heat-resistant and **transparent**, with good **optical** properties)

RN 117955-60-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2,6-diethylphenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

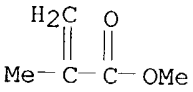
CM 1

CRN 38167-72-5
CMF C14 H15 N O2




CM 2

CRN 80-62-6
CMF C5 H8 O2

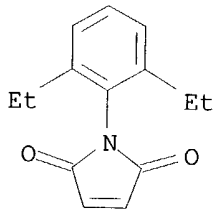



RN 117955-63-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2,6-diethylphenyl)-1H-pyrrole-2,5-dione and ethenylbenzene (9CI) (CA INDEX NAME)

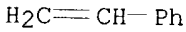
CM 1

CRN 38167-72-5
CMF C14 H15 N O2



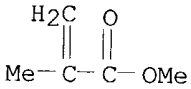
CM 2

CRN 100-42-5
CMF C8 H8



CM 3

CRN 80-62-6
CMF C5 H8 O2



L29 ANSWER 22 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1989:408385 HCAPLUS
DN 111:8385
ED Entered STN: 08 Jul 1989
TI Heat-resistant transparent copolymers of methyl methacrylate and (dialkylphenyl)maleimides as optical materials
IN Suzuki, Yutaka
PA Ihara Chemical Industry Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F220-14
ICA C08F222-40; G02B001-04; G11B007-24
ICI C08F220-14, C08F222-40
CC 37-6 (Plastics Manufacture and Processing)
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 63234009 | A2 | 19880929 | JP 1987-267551 | 19871022 |
| PRAI JP 1986-255415 | | 19861027 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 63234009 | ICM | C08F220-14 |

ICA C08F222-40; G02B001-04; G11B007-24
ICI C08F220-14, C08F222-40

OS MARPAT 111:8385

AB The title polymers are prepared from Me methacrylate (I) 55-98, N-(2,6-dialkylphenyl)maleimides 2-45, and other vinyl monomers 0-40 parts. A mixture of I 90, N-(2,6-diethylphenyl)maleimide 10, and azobisisobutyronitrile 0.5 part was polymerized between glass plates at 75° for 6 h and 95° for 2 h to give a colorless transparent resin having high heat-distortion temperature and light transmittance and low birefringence.

ST methacrylate methyl dialkylphenylmaleimide copolymer; maleimide dialkylphenyl methacrylate copolymer; phenylmaleimide dialkyl methacrylate copolymer; transparency methacrylate dialkylphenylmaleimide copolymer; optical material methacrylate copolymer

IT Transparent materials
(Me methacrylate-(dialkylphenyl)maleimide copolymers, preparation of)

IT Polymerization
(of Me methacrylate with (dialkylphenyl)maleimides, for optical materials)

IT **117955-60-9P 117955-61-0P 117955-62-1P**
**117955-63-2P 117955-64-3P**
RL: PREP (Preparation)
(preparation of **transparent**, for **optical** materials)

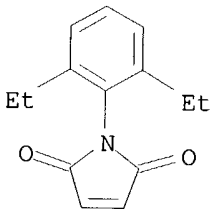
IT **117955-60-9P 117955-61-0P 117955-62-1P**
**117955-63-2P 117955-64-3P**
RL: PREP (Preparation)
(preparation of **transparent**, for **optical** materials)

RN 117955-60-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2,6-diethylphenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

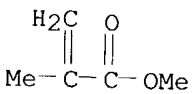
CM 1

CRN 38167-72-5
CMF C14 H15 N O2




CM 2

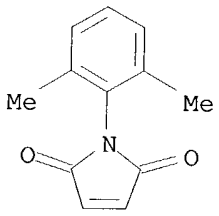
CRN 80-62-6
CMF C5 H8 O2



RN 117955-61-0 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2,6-dimethylphenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

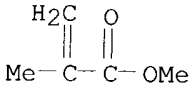
CM 1

CRN 1206-49-1
CMF C12 H11 N O2




CM 2

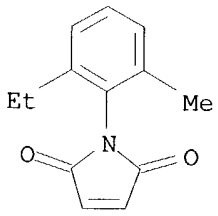
CRN 80-62-6
CMF C5 H8 O2




RN 117955-62-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2-ethyl-6-methylphenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

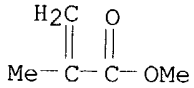
CM 1

CRN 56746-13-5
CMF C13 H13 N O2




CM 2

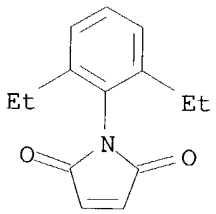
CRN 80-62-6
CMF C5 H8 O2



RN 117955-63-2 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2,6-diethylphenyl)-1H-pyrrole-2,5-dione and ethenylbenzene (9CI) (CA INDEX NAME)

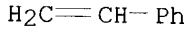
CM 1

CRN 38167-72-5
CMF C14 H15 N O2



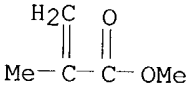
CM 2

CRN 100-42-5
CMF C8 H8



CM 3

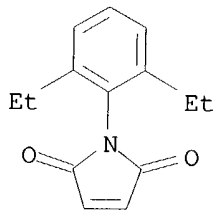
CRN 80-62-6
CMF C5 H8 O2



RN 117955-64-3 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2,6-diethylphenyl)-1H-pyrrole-2,5-dione and (1-methylethenyl)benzene (9CI) (CA INDEX NAME)

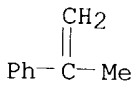
CM 1

CRN 38167-72-5
CMF C14 H15 N O2



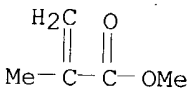
CM 2

CRN 98-83-9
CMF C9 H10



CM 3

CRN 80-62-6
CMF C5 H8 O2



L29 ANSWER 23 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1989:126942 HCAPLUS
DN 110:126942
ED Entered STN: 03 Apr 1989
TI Electrically conductive heat-resistant vinyl chloride-maleimide copolymer compositions
IN Sakamoto, Kazuo; Oda, Tatsuro
PA Sekisui Chemical Co. Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08L027-06
ICS C08K003-24
CC 76-2 (Electric Phenomena)
Section cross-reference(s): 35, 37, 38
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 63235353 | A2 | 19880930 | JP 1987-69386 | 19870324 |
| PRAI | JP 1987-69386 | | 19870324 | | |

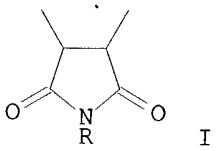
CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

| | | |
|---|---|---|
| JP 63235353 | ICM | C08L027-06 |
| | ICS | C08K003-24 |

GI



I

AB The compns. comprise heat-resistant copolymers containing vinyl chloride units and N-substituted maleimide units I [R = (substituted) C1-30 aliphatic, alicyclic, or aromatic hydrocarbon group], and metal salts. Thus, 0.45 kg N-cyclohexylmaleimide and 4.0 kg vinyl chloride were suspension-polymerized in 14 L deionized water containing 10 g saponified poly(vinyl alc.) and 10 g tert-Bu peroxyneodecanoate at 50° for 8 h to give 3.8 kg polymer (II) with average d.p. 1190 and vinyl chloride content 87.5%. A 20% solution of II in a 3:1 THF-cyclohexanone mixture was mixed with 0.15 g LiClO4 per 50 g solution, cast on a glass plate, dried at room temperature for 24 h and at 50° for 48 h under reduced pressure to give a 100-μm-thick film which showed surface resistance 7.8 + 1010 Ω, volume resistivity 0.7 + 1012 Ω-cm, good **transparency**, and no bleeding, vs. 1.5 + 1015 Ω, 3.5 + 1015 Ω-cm, poor **transparency**, and bleeding, resp., for a control containing vinyl chloride homopolymer (average d.p. 1380) in place of II.

ST vinyl chloride polymer elec conductive; maleimide vinyl chloride copolymer conductive; **transparent** vinyl chloride maleimide copolymer; antistatic vinyl chloride maleimide copolymer; metal salt conductive vinyl copolymer

IT **Transparent** materials
(N-substituted maleimide-vinyl chloride copolymers containing metal salts, elec. conductive, heat-resistant, manufacture of)

IT Heat-resistant materials
(N-substituted maleimide-vinyl chloride copolymers containing metal salts, elec. conductive, **transparent**, manufacture of)

IT Electric conductors
(N-substituted maleimide-vinyl chloride copolymers containing metal salts, heat-resistant, **transparent**, manufacture of)

IT **27903-37-3P**, N-Phenylmaleimide-vinyl chloride copolymer
28210-06-2P, N-Cyclohexylmaleimide-vinyl chloride copolymer
RL: **IMF (Industrial manufacture)**; PRP (Properties); **PREP (Preparation)**
(elec. conductive, heat-resistant, **transparent**, containing metal salts, manufacture of)

IT 540-72-7, Sodium thiocyanate 7791-03-9, Lithium perchlorate
RL: PRP (Properties)
(vinyl chloride-maleimide copolymers containing, elec. conductive, heat-resistant, **transparent**)

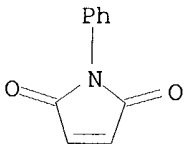
IT **27903-37-3P**, N-Phenylmaleimide-vinyl chloride copolymer
RL: **IMF (Industrial manufacture)**; PRP (Properties); **PREP (Preparation)**
(elec. conductive, heat-resistant, **transparent**, containing metal salts, manufacture of)

RN 27903-37-3 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with chloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

CRN 75-01-4
CMF C2 H3 Cl

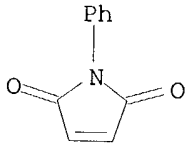
$H_2C{=}CH{-}Cl$

L29 ANSWER 24 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1987:177614 HCAPLUS
DN 106:177614
ED Entered STN: 29 May 1987
TI Mold for fabricating elements from transparent allyl polymers
AU Smirnov, V. I.; Alekseev, N. N.; Nikiforenko, V. S.; Bagdasaryan, K. V.; Kochikyan, A. V.
CS USSR
SO Optiko-Mekhanicheskaya Promyshlennost (1987), (1), 36-7
CODEN: OPMPAQ; ISSN: 0030-4042
DT Journal
LA Russian
CC 38-2 (Plastics Fabrication and Uses)
AB Transparent cubes were prepared from diethylene glycol diallyl carbonate (I) by polymerization and copolymn. in molds of stainless Steel 9Kh18 [12718-19-3].
The I polymers had good optical properties, impact toughness, and abrasive, chemical, radiation, and heat resistance. The quality of cubes from I polymers was not inferior to that of thermoplastic materials, e.g., poly(Me methacrylate) obtained by injection molding.
ST polyallyl polycarbonate polyoxyethylene reaction molding; transparent polyallyl stainless steel mold
IT Transparent materials
(polyallyl-polycarbonate-polyoxyethylenes, reaction molding of, stainless steel molds for, optical properties in relation to)
IT Polycarbonates, uses and miscellaneous
RL: USES (Uses)
(polyallyl-polyoxyethylene-, reaction molding of transparent, stainless steel molds for)
IT Molding apparatus for plastics and rubbers
(molds, stainless steel, for transparent diethylene glycol bisallylcarbonate polymers)

IT 25656-90-0 31530-29-7, Diethylene glycol bisallylcarbonatemethyl methacrylate copolymer **108144-80-5**
RL: USES (Uses)
(molding of **transparent**, reaction, stainless steel molds for, **optical** properties in relation to)
IT 12718-19-3
RL: USES (Uses)
(molds, for reaction molding of transparent polyallyl-polycarbonate-polyoxyethylenes)
IT **108144-80-5**
RL: USES (Uses)
(molding of **transparent**, reaction, stainless steel molds for, **optical** properties in relation to)
RN 108144-80-5 HCAPLUS
CN 2,5,8,10-Tetraoxatridec-12-enoic acid, 9-oxo-, 2-propenyl ester, polymer with 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

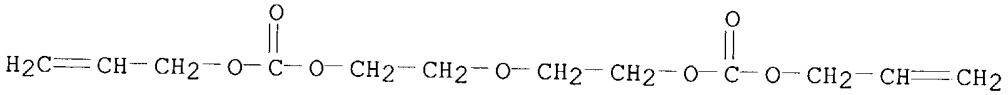
CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

CRN 142-22-3
CMF C12 H18 O7



L29 ANSWER 25 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1987:19624 HCAPLUS
DN 106:19624
ED Entered STN: 24 Jan 1987
TI Optical disk substrates
IN Tanaka, Masayuki; Yokoikawa, Takumi; Kishimoto, Akihiko
PA Toray Industries, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F220-14
ICA G11B007-24
ICI C08F220-14, C08F222-40
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37, 74

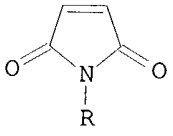
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 61095011 | A2 | 19860513 | JP 1984-216331 | 19841017 |
| PRAI JP 1984-216331 | | 19841017 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 61095011 | ICM | C08F220-14 |
| | ICA | G11B007-24 |
| | ICI | C08F220-14, C08F222-40 |

GI



I

AB Optical disk substrates are composed of copolymers prepared by polymerizing mixts. of 55-98% Me methacrylate, 2-25% maleimides I [R = H, (substituted) C1-20 alkyl, aryl], and 0-40% vinyl monomers. The copolymers show good heat resistance and transparency and low birefringence. Thus, heating a mixture of CH2:CMeCO2Me 95, N-methylmaleimide 5, and AIBN 0.5 part at 75° for 6 h and then at 95° for 2 h gave a copolymer which showed heat distortion temperature 109°, light transmission 90%, birefringence 10 nm, and n 1.495.

ST methacrylate maleimide copolymer optical disk; heat resistance optical disk substrate; transparency optical disk substrate; birefringence redn optical disk substrate

IT Transparent materials
(alkyl methacrylate-maleimide copolymers, heat-resistant, with low birefringence, for optical disk substrates)

IT Recording apparatus
(optical disks, alkyl methacrylate-maleimide copolymers as substrates for, heat-resistant, transparent, with low birefringence)

IT Imides
RL: USES (Uses)
(unsatd., polymers with alkyl methacrylates, as substrates for optical disks)

IT 27881-11-4, N-Methylmaleimide-methyl methacrylate copolymer 30642-90-1, N-Butylmaleimide-methyl methacrylate copolymer **32554-23-7**, Methyl methacrylate-N-phenylmaleimide copolymer 105188-60-1, N-tert-Butylmaleimide-methyl methacrylate-styrene copolymer 105188-61-2, N-Cyclohexylmaleimide-methyl methacrylate-α-methylstyrene copolymer
RL: USES (Uses)
(heat-resistant and **transparent**, as substrates for **optical** disks)

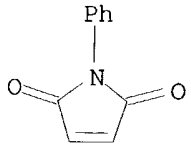
IT **32554-23-7**, Methyl methacrylate-N-phenylmaleimide copolymer
RL: USES (Uses)
(heat-resistant and **transparent**, as substrates for **optical** disks)

RN 32554-23-7 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

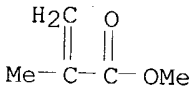
CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

CRN 80-62-6
CMF C5 H8 O2



L29 ANSWER 26 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1975:460408 HCAPLUS
DN 83:60408
ED Entered STN: 12 May 1984
TI Acrylonitrile copolymers and articles made from them
PA Imperial Chemical Industries Ltd., UK
SO Neth. Appl., 22 pp. Division of Neth. Appl. 65 05,064 (CA 64;12835F).
CODEN: NAXXAN
DT Patent
LA Dutch
IC C08F
CC 36-3 (Plastics Manufacture and Processing)
FAN.CNT 3

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | NL 7407359 | A | 19740826 | NL 1974-7359 | 19740531 |
| | DE 1570789 | A | 19700102 | DE 1965-J27935 | 19650415 |
| | US 3652726 | A | 19720328 | US 1968-729891 | 19680517 |
| | US 3766142 | A | 19731016 | US 1971-196743 | 19711108 |
| PRAI | GB 1964-16502 | A | 19640421 | | |
| | GB 1964-45289 | A | 19641106 | | |
| | US 1965-447971 | A | 19650414 | | |
| | US 1966-537028 | A2 | 19660323 | | |
| | GB 1967-23670 | A | 19670522 | | |
| | US 1968-729891 | A2 | 19680517 | | |
| | US 1968-767481 | A2 | 19681014 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| NL 7407359 | IC | C08F |

AB Acrylonitrile (I) copolymers with improved molding properties, processing temperature, and phys. properties were prepared by free radical polymerization from I

1-98, N-arylmaleimide 1-98, and olefin(s) 1-98 mole%. Thus, N-phenylmaleimide 20, I 40, and isobutylene 40 mole% were copolymd. in aqueous dispersion in the presence of a redox catalyst at 30° under pressure, giving a terpolymer [33408-59-2] with reduced viscosity 0.94 and melt viscosity 16 + 103 P, which remained relatively constant The polymer was compression molded at 250° into a **transparent** amber plate with initial and final Vicat softening points 154 and 164° and bending strength 3.3 kg/cm2.

ST acrylonitrile copolymer molding; maleimide copolymer molding; isobutylene copolymer molding

IT 31621-07-5P **33408-59-2P 55884-94-1P 55884-95-2P 55884-96-3P 55884-97-4P**
RL: **PREP (Preparation)**
(manufacture of, with improved molding properties)

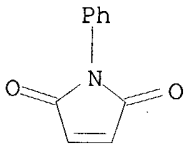
IT **33408-59-2P 55884-94-1P 55884-95-2P 55884-96-3P 55884-97-4P**
RL: **PREP (Preparation)**
(manufacture of, with improved molding properties)

RN 33408-59-2 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 2-methyl-1-propene and 2-propenenitrile (9CI) (CA INDEX NAME)

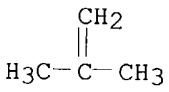
CM 1

CRN 941-69-5
CMF C10 H7 N O2



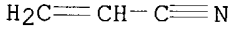
CM 2

CRN 115-11-7
CMF C4 H8



CM 3

CRN 107-13-1
CMF C3 H3 N



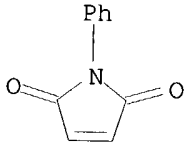
RN 55884-94-1 HCAPLUS

CN 2-Propenenitrile, polymer with 2-methyl-1-pentene and 1-phenyl-1H-pyrrole-

2,5-dione (9CI) (CA INDEX NAME)

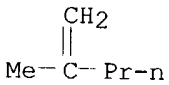
CM 1

CRN 941-69-5
CMF C10 H7 N O2



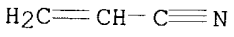
CM 2

CRN 763-29-1
CMF C6 H12



CM 3

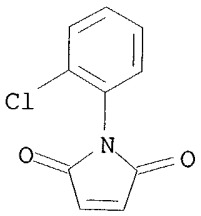
CRN 107-13-1
CMF C3 H3 N



RN 55884-95-2 HCAPLUS
CN 2-Propenenitrile, polymer with 1-(2-chlorophenyl)-1H-pyrrole-2,5-dione and 2-methyl-1-propene (9CI) (CA INDEX NAME)

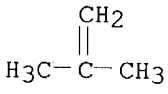
CM 1

CRN 1203-24-3
CMF C10 H6 Cl N O2



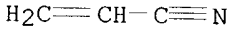
CM 2

CRN 115-11-7
CMF C4 H8



CM 3

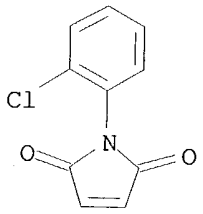
CRN 107-13-1
CMF C3 H3 N



RN 55884-96-3 HCAPLUS
CN 2-Propenenitrile, polymer with 1-(2-chlorophenyl)-1H-pyrrole-2,5-dione and 1-propene (9CI) (CA INDEX NAME)

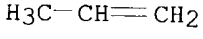
CM 1

CRN 1203-24-3
CMF C10 H6 Cl N O2



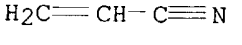
CM 2

CRN 115-07-1
CMF C3 H6



CM 3

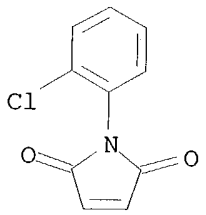
CRN 107-13-1
CMF C3 H3 N



RN 55884-97-4 HCAPLUS
CN 2-Propenenitrile, polymer with 1-(2-chlorophenyl)-1H-pyrrole-2,5-dione and ethene (9CI) (CA INDEX NAME)

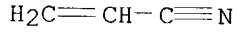
CM 1

CRN 1203-24-3
CMF C10 H6 Cl N O2



CM 2

CRN 107-13-1
CMF C3 H3 N



CM 3

CRN 74-85-1
CMF C2 H4

L29 ANSWER 27 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1967:422437 HCAPLUS
DN 67:22437
ED Entered STN: 12 May 1984
TI N-Substituted maleimide copolymers
IN Barr, Dennis A.; Nield, Eric; Rose, John Brewster
PA Imperial Chemical Industries Ltd.
SO Brit., 8 pp.
CODEN: BRXXAA
DT Patent
LA English
IC C08F
CC 36 (Plastics Manufacture and Processing)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | GB 1066715 | | 19670426 | GB | 19621116 |

US 3352832 19670000 US

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| GB 1066715 | IC | C08F |

AB N-Substituted maleimides were copolymd. with ≥1 ethylenically unsatd. monomer. Thus, N-phenylmaleimide 5.19, C6H6 4.4, isobutene 1.68, and azodiisobutyronitrile 0.05 part were charged to a reaction vessel which was purged with N, degassed, and sealed in vacuo. After 1 day at 60°, the seal was broken and the polymer was dissolved in CHCl3 and repptd. by pouring into petroleum ether (b. 40-60°) to yield 5.9 parts copolymer with reduced viscosity 0.7 and Vicat softening point 221.5. The polymer was compression molded at 250-70° to give a **transparent** film which did not craze when immersed in boiling water for 120 min. The 2% water picked up was removed on drying. Similar copolymers were prepared with isobutene and N-(o-tolyl)maleimide or N-(o-chlorophenyl)maleimide. Copolymers and terpolymers were also prepared using ethylene, propylene, isobutene, 1-butene, 4-methyl-1-pentene, butadiene, Et acrylate, chloroprene, or styrene as monomer.

ST MALEIMIDES **TRANSPARENT** POLYMERS; POLYMERS MALEIMIDES **TRANSPARENT**

IT Plastics
RL: USES (Uses)
(from N-arylmaleimide polymers with olefins)

IT Olefins, preparation
RL: PREP (Preparation)
(polymers with N-arylmaleimide)

IT 941-69-5
RL: USES (Uses)
(polymers with olefins)

IT **26938-50-1P**, preparation **30523-66-1P**, preparation **30523-67-2P**, preparation **30523-68-3P**, preparation **30523-69-4P**, preparation **30523-70-7P** **30523-71-8P** **30523-73-0P**, preparation 30523-74-1P, preparation 30523-75-2P, preparation **30523-76-3P**, preparation **30523-77-4P**, preparation
RL: **PREP (Preparation)**
(preparation of)

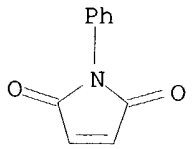
IT **26938-50-1P**, preparation **30523-66-1P**, preparation **30523-67-2P**, preparation **30523-68-3P**, preparation **30523-69-4P**, preparation **30523-70-7P** **30523-71-8P** **30523-73-0P**, preparation **30523-76-3P**, preparation **30523-77-4P**, preparation
RL: **PREP (Preparation)**
(preparation of)

RN 26938-50-1 HCAPLUS

CN Maleimide, N-phenyl-, polymer with 1,3-butadiene (8CI) (CA INDEX NAME)

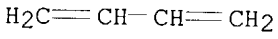
CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

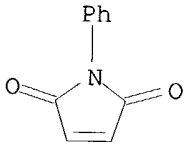
CRN 106-99-0
CMF C4 H6



RN 30523-66-1 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 2-methyl-1-propene (9CI) (CA INDEX NAME)

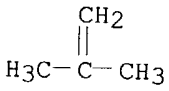
CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

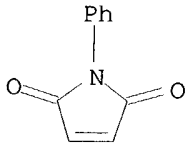
CRN 115-11-7
CMF C4 H8



RN 30523-67-2 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 1-propene (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

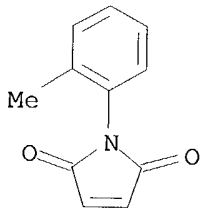
CRN 115-07-1
CMF C3 H6



RN 30523-68-3 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-(2-methylphenyl)-, polymer with 2-methyl-1-propene (9CI) (CA INDEX NAME)

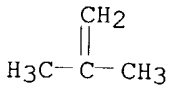
CM 1

CRN 4067-01-0
CMF C11 H9 N O2



CM 2

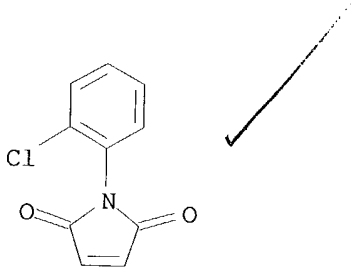
CRN 115-11-7
CMF C4 H8



RN 30523-69-4 HCAPLUS
CN Maleimide, N-(o-chlorophenyl)-, polymer with 2-methylpropene (8CI) (CA INDEX NAME)

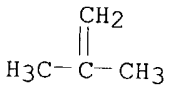
CM 1

CRN 1203-24-3
CMF C10 H6 Cl N O2



CM 2

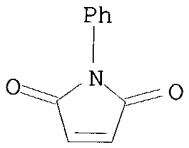
CRN 115-11-7
CMF C4 H8



RN 30523-70-7 HCAPLUS
CN Maleimide, N-phenyl-, polymer with 4-methyl-1-pentene (8CI) (CA INDEX NAME)

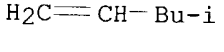
CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

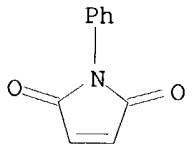
CRN 691-37-2
CMF C6 H12



RN 30523-71-8 HCAPLUS
CN Maleimide, N-phenyl-, polymer with 1-butene (8CI) (CA INDEX NAME)

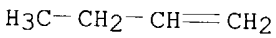
CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

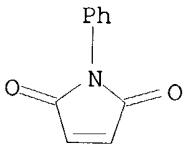
CRN 106-98-9
CMF C4 H8



RN 30523-73-0 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with ethene (9CI) (CA INDEX NAME)

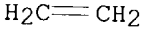
CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

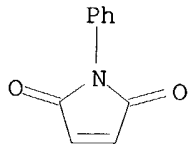
CRN 74-85-1
CMF C2 H4



RN 30523-76-3 HCAPLUS
CN Maleimide, N-phenyl-, polymer with 1,3-butadiene and 2-methylpropene (8CI) (CA INDEX NAME)

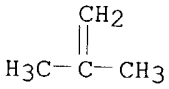
CM 1

CRN 941-69-5
CMF C10 H7 N O2



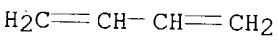
CM 2

CRN 115-11-7
CMF C4 H8



CM 3

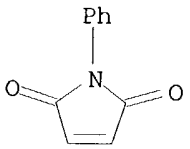
CRN 106-99-0
CMF C4 H6



RN 30523-77-4 HCAPLUS
CN Acrylic acid ethyl ester, polymer with 2-methylpropene and N-phenylmaleimide (8CI) (CA INDEX NAME)

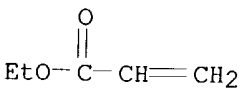
CM 1

CRN 941-69-5
CMF C10 H7 N O2



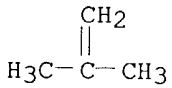
CM 2

CRN 140-88-5
CMF C5 H8 O2



CM 3

CRN 115-11-7
CMF C4 H8



L29 ANSWER 28 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1967:66054 HCAPLUS
DN 66:66054
ED Entered STN: 12 May 1984
TI Copolymers of N-substituted maleimides
IN Barr, Dennis A.; Nield, Eric; Rose, John Brewster
PA Imperial Chemical Industries Ltd.
SO Brit., 5 pp.
CODEN: BRXXAA
DT Patent
LA English
IC C08F
CC 35 (Synthetic High Polymers)
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI GB 1053860 | | 19670104 | GB | 19621121 |

CLASS

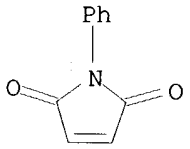
| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| GB 1053860 | IC | C08F |

AB N-Phenylmaleimide and some of its derivatives were copolymd. with vinyl ethers to give colorless products which were **transparent**, H2O-resistant, and stable at elevated temps. Thus, N-phenylmaleimide (I) 5.19, vinyl ethyl ether (II) 2.16, dry C6H6 8.97, and azodiisobutyronitrile 0.05 part were charged into a vessel that was purged with N, evacuated, and sealed. After 2 days at 60°, the polymer was dissolved in CHCl3, precipitated from warm petroleum ether, filtered, extracted with ether under reflux, and dried in vacuum to yield 6.6 parts copolymer with a reduced viscosity of 0.99 and a 10/10th Vicat Softening Point of 189°. The polymer, compression molded at 250° gave a **transparent** film that did not craze when immersed in boiling water for 2 hrs. Similarly prepared copolymers were (maleimide, vinyl ether, and yield given): I, vinyl iso-Bu ether, 6.3 parts; and N-(2-methylphenyl)maleimide, II, 6.9 parts.
ST MALEIMIDES COPOLYMERS; VINYL ETHERS COPOLYMERS; PHENYLMALEIMIDES COPOLYMERS; **TRANSPARENT** MALEIMIDE COPOLYMERS; FILMS MALEIMIDE COPOLYMERS
IT Polymerization
(of N-phenylmaleimides with vinyl ethers)
IT **31606-69-6P 31606-70-9P 31626-90-1P**
RL: **PREP (Preparation)**
(preparation of)
IT **31606-69-6P 31606-70-9P 31626-90-1P**
RL: **PREP (Preparation)**

(preparation of)
RN 31606-69-6 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with ethoxyethene (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

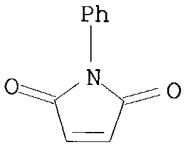
CRN 109-92-2
CMF C4 H8 O

$H_3C-CH_2-O-CH=CH_2$

RN 31606-70-9 HCAPLUS
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 1-(ethenyloxy)-2-methylpropane (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5
CMF C10 H7 N O2



CM 2

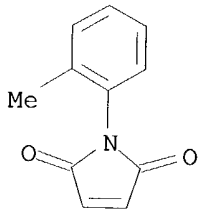
CRN 109-53-5
CMF C6 H12 O

i-BuO-CH=CH$_2$

RN 31626-90-1 HCAPLUS
CN Maleimide, N-o-tolyl-, polymer with ethyl vinyl ether (8CI) (CA INDEX NAME)

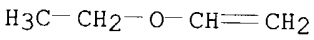
CM 1

CRN 4067-01-0
CMF C11 H9 N O2




CM 2

CRN 109-92-2
CMF C4 H8 O

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